PRIMARY AND JUNIOR SCIENCE INNOVATIVE IN-SERVICE PROJECTS

BOARD REPORTS, 1987-89

RAPPORTS DES CONSEILS SCOLAIRES, 1987-1989

PROJETS PILOTES DE FORMATION EN COURS D'EMPLOI SUR LES SCIENCES AUX CYCLES PRIMAIRE ET MOYEN

Ontario
Ministry of Education
Ministère de l'Education

PRIMARY AND JUNIOR SCIENCE INNOVATIVE IN-SERVICE PROJECTS BOARD REPORTS, 1987-1989

PROJETS PILOTES DE FORMATION EN COURS D'EMPLOI SUR LES SCIENCES AUX CYCLES PRIMAIRE ET MOYEN RAPPORTS DES CONSEILS SCOLAIRES, 1987-1989

90-06077/

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FOREWORD

The Ministry of Education released *Science in Primary and Junior Education: A Statement of Direction* in the fall of 1986. This document outlined twenty-four initiatives for the renewal of science education in the Primary and Junior Divisions in both English- and French-language schools.

One of these initiatives focused on professional development, stating:

> The ministry will provide special grants to school boards in support of the development, testing, and reporting of innovative pilot projects in in-service teacher education in Primary and Junior science

One million dollars was allocated to this initiative over a two-year period. School boards were invited to submit proposals for funding in 1987-88 and again in 1988-89. The maximum amount that any one school board could receive was $20 000.

The Ministry of Education funded 54 school boards in Year I of the initiative (1987-88) and 84 school boards in Year II (1988-89). Participating school boards were requested to submit a one-page report of their project to be included in a publication.

This document is a compilation of these reports, which are reproduced unedited, and has been published to enable school boards in Ontario to share ideas on innovative pilot projects in in-service teacher education in Primary and Junior science.

The Ministry of Education recognizes the efforts of the participating school boards and expects the information in this document to be of significant use in planning future in-service activities in science education across the province.

AVANT-PROPOS

Le guide intitulé *Sciences. L'enseignement des sciences aux cycles primaire et moyen : Document d'orientation* a été publié par le ministère de l'Éducation à l'automne de 1986. Ce document regroupait vingt-quatre mesures pour la réorientation de l'enseignement des sciences aux cycles primaire et moyen dans les écoles de langue française et anglaise.

L'une de ces mesures était centrée sur le perfectionnement professionnel et se lisait comme suit :

> Le ministère accordera des subventions spéciales aux conseils scolaires qui procéderont à l'élaboration, à l'expérimentation et à la diffusion de projets pilotes pour la formation en cours d'emploi dans le cadre de l'enseignement des sciences aux cycles primaire et moyen.

La somme d'un million de dollars a été octroyée pour la mise en oeuvre de cette mesure pendant une période de deux ans. Les conseils scolaires ont été invités à soumettre des projets lors de concours pour l'attribution de ces subventions en 1987-1988 et en 1988-1989. La somme maximale qui pouvait être attribuée à un conseil scolaire était de 20 000 $.

Le ministère de l'Éducation a octroyé des subventions à 54 conseils scolaires pendant la première année (1987-1988) et à 84 conseils scolaires pendant la deuxième année (1988-1989). Les conseils scolaires participants ont dû soumettre un rapport d'une page sur leur projet qui sera inclus dans une publication.

Le présent document résulte de la compilation de ces rapports dans leur forme inédite. Il a été publié dans le but de permettre aux conseils scolaires de l'Ontario d'échanger des idées sur les projets pilotes innovateurs pour la formation en cours d'emploi dans le cadre de l'enseignement des sciences aux cycles primaire et moyen.

Le ministère de l'Éducation reconnaît les efforts des conseils scolaires participants et s'attend à ce que les renseignements diffusés par le présent document soient particulièrement utiles lors de la planification des activités ultérieures de formation en cours d'emploi axées sur l'enseignement des sciences, et ce partout en Ontario.

PRIMARY AND JUNIOR SCIENCE
INNOVATIVE IN-SERVICE PROJECTS
BOARD REPORTS, 1987-88
YEAR I

PROJETS PILOTES DE FORMATION
EN COURS D'EMPLOI SUR LES SCIENCES
AUX CYCLES PRIMAIRE ET MOYEN
RAPPORTS DES
CONSEILS SCOLAIRES, 1987-1988
1ère ANNÉE

CENTRAL ONTARIO REGION

CENTRE DE L'ONTARIO

BRANT COUNTY BOARD OF EDUCATION

TITLE

Science Is Happening Here

FOCUS OF PROJECT

To introduce the document *Science Is Happening Here* by raising awareness of and stimulating enthusiasm for the science component of Environmental Studies

TARGET GROUP

Science Key Teachers in each school
(Primary 35, Junior 37)
Principals and Vice Principals

SPECIAL FEATURES

The role of the science key teachers was and continues to be to heighten awareness, to improve the comfort level and to be the catalyst for "science to happen within the school".

BOARD CONTACT

Doug McLeish, Coordinator
Junior Division
Brant County Board of Education
349 Erie Avenue
Brantford, Ontario
N3T 5V3
(519) 756-6301

PROGRAM SUMMARY

The in-service sessions emphasized an integrated child-centred and balanced program in science. The workshop leaders provided both male and female role models and demonstrated the application of science in the real world of the child.

The following were the objectives for the first year:

1. to raise teachers' awareness of the science component of environmental studies
2. to stimulate enthusiasm for the teaching of science
3. to give teachers practical hands-on activities
4. to address the special needs of girls in kindling and maintaining their interest in science
5. to introduce the document *Science Is Happening Here* in a meaningful way

BRANT COUNTY ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary/Junior Division Science Project

FOCUS OF PROJECT

Improvement in Science Education

TARGET GROUP

One "Lighthouse" classroom in each of 10 elementary schools

SPECIAL FEATURES

Lighthouse classrooms

BOARD CONTACT

Mike Demers, Superintendent of Education/Program
Brant County Roman Catholic Separate School Board
322 Fairview Drive
Brantford, Ontario
N3T 5M8
(519) 756-6369

PROGRAM SUMMARY

Project Description

This project is centred on the establishment of one "Lighthouse" classroom in each of 10 elementary schools. Five of these classrooms are to be in the Primary division and the other five are to be in the Junior division. A French classroom will be included. It is anticipated that 80% of the participants will be female. Principals are to be responsible for selection of the staff to be involved. Teachers in these classrooms will receive four days of specialized in-service which will include:

a) examination of the new Science document
b) careful examination of points of integration with other subjects
c) additional input on what a child-centred program should be
d) building of a balanced Science program eventually available for the remainder of the school system
e) time to develop a coaching model for other teachers visiting these lighthouse situations
f) sharing time to clarify objectives and planning routines
g) interviews with senior secondary and post-secondary female students studying in the realm of Science to share common interests
h) ordering and acquiring specialized Science material to facilitate hands-on learning
i) input re: use of computer software available

These classrooms will be established for the 88/89 school year with in-service being held in May and October 1988. Dates are based on the receipt of the new Science document by April 1988.

These classrooms will also be visited by senior female secondary Science students who will describe their current studies to the pupils.

Facilitators will also attempt to arrange for a female practitioner in a scientific field to be a guest of each class for interview purposes (e.g. lab technician, pilot, doctor, engineer).

Coaching

This project is intended to welcome other staff members to observe and share in the experience conducted by a fellow staff member. Such periods of time are to be arranged by the local school principal.

DUFFERIN-PEEL ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary/Junior Science Innovative In-Service

FOCUS OF PROJECT

Priority Developmental-Human Resources for:
1) Gender Sensitive Issues in Science
2) Science Kit Committee and Science Olympics Sub Committee

TARGET GROUP

1) 10 members - Gender Sensitive Issues in Science Committee
2) 11 members - Science Kit Committee

SPECIAL FEATURES

Training Trainers Model

BOARD CONTACT

Kathleen Eatherley
Dufferin-Peel Roman Catholic Separate School Board
40 Matheson Boulevard West
Mississauga, Ontario
L5R 1C5
890-1221

PROGRAM SUMMARY

1) Gender Sensitive Issues in Science Committee - October '87/May '88

- Members held small in-service sessions meetings to better understand the issues involved with equal opportunities for both girls and boys in Science.

2) Science Kit Committee

In-Service sessions were provided for this committee:
- to better understand the philosophy of hands-on materials
- in-service of Series I and II of the Ontario Science Centre Kit and in-service of developed Kits for board wide use

EAST YORK, BOARD OF EDUCATION FOR THE BOROUGH OF

TITLE

Science Institute

FOCUS OF PROJECT

Implementation of *Science is Happening Here*

TARGET GROUP

64 teachers (K - 6)

SPECIAL FEATURES

Science Institute Workshops

BOARD CONTACT

Joan Thompson
Elementary Science Consultant
Board of Education for the Borough of East York
840 Coxwell Avenue
Toronto, Ontario
M4C 2V3
465-4631

PROGRAM SUMMARY

Four groups of sixteen teachers were released for six full days to participate in the Science Institute workshops. Teachers participated in activity-based Science including such areas as technology, space, life science, and outdoor education. One full day was spent at Kortright Centre for Conservation. Sessions were held on planning, evaluation, and integration. Some teachers opted to extend their experience by attending an additional evening session each week. As a result they earned Elementary Science Pt. I certification for York University.

The program was so popular with teachers that it was repeated the next year with an additional forty teachers.

HALDIMAND BOARD OF EDUCATION

TITLE

TIPS (Teachers Investigating Primary/Junior Science)

FOCUS OF PROJECT

Development and implementation of science curriculum in line with *Science Is Happening Here*

TARGET GROUP

Primary/Junior teachers

SPECIAL FEATURES

Child-centred curriculum

BOARD CONTACT

Fred Disher
Superintendent of Schools
Haldimand Board of Education
Box 2000
Cayuga, Ontario
N0A 1E0
(416) 722-3391

PROGRAM SUMMARY

The TIPS Project was conducted to assist Primary and Junior teachers to investigate ways to begin to develop and implement a child-centred and active science curriculum which will become an integrated part of the whole balanced Primary/Junior Curriculum.

HALDIMAND-NORFOLK ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Science Education Resource Teacher (SERT)

FOCUS OF PROJECT

Science Is Happening Here in the Junior grades

TARGET GROUP

903 Junior students
40 Junior teachers

SPECIAL FEATURES

A Junior Science Resource Teacher to serve as a model teacher and assist with the implementation of the science program in the classrooms

BOARD CONTACT

Dennis Shewburg, Superintendent of Schools
Haldimand-Norfolk Roman Catholic Separate School Board
Box 278
Simcoe, Ontario
N3Y 4L1
(519) 426-8370

PROGRAM SUMMARY

During this year, the SERT visited every Junior level class as well as a number of Primary rooms.

Within the course of this year, the SERT worked to develop the skills and processes as directed by *Science Is Happening Here*. These include observing, predicting, reporting, classifying, modelling, drawing conclusions, designing and stimulating.

These skills were introduced around the following knowledge areas:

Forces and Machines
Life in the Water
Magnets
Electromagnet
Light and Mirrors
Classification
Solutions
Crystals
Kitchen Chemistry
Human Senses
Bones and Skulls
Land Animals
Bridge Building
Electricity
Temperature
Science problem Solving
Science Games
Science Fairs

HALTON BOARD OF EDUCATION

TITLE

Science Integration Project

FOCUS OF PROJECT

Developing teacher skills related to planning and implementing integrated science units

TARGET GROUP

6 schools and 24 teachers

SPECIAL FEATURES

An intensive on-site in-service with school teams with administrative involvement

BOARD CONTACT

John Pettit
Halton Board of Education
2050 Guelph Line
P.O. Box 5005
Burlington, Ontario
L7R 3Z2
335-3663

PROGRAM SUMMARY

The Halton Science Innovative In-Service Project had as its objective the development of a process for implementing the new policy document *Science Is Happening Here.* A teacher/consultant steering committee outlined a model that focused on the in-service of a group of key classroom teachers.

Six classroom teachers were identified to participate in the initial in-service program. Throughout the fall of 1987 the science consultant conducted a series of workshops attended by several consultants and the six teachers.

The sessions were spent on the development of a process for writing integrated, science-based resource documents for classroom teachers that reflected the philosophy and guiding principles of *Science Is Happening Here.* Emphasis was put on the family of school teams and their in-service. Those teachers and consultants would work in a school assisting teachers to develop new resource units and to implement them in their classrooms. The establishment of an environment in which a child-centred, balanced, experiential, science-based program can flourish was considered more important than the actual units of study.

For the period February to June 1988, six schools identified two primary-junior teachers to work with the family team. A school administrator was expected to take an active interest in the project. A total of 12 days of release time was provided each school to develop and in-service a resource unit. Examples of the resource units included: *Flight, Bubbles, Hot Wheels* and *Birds.*

HALTON ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Junior Science Satellite Project

FOCUS OF PROJECT

Hands-on Science In-Service through coaching in the Junior Division classroom

TARGET GROUP

Junior Division Classrooms in 24 English and 3 French schools

SPECIAL FEATURES

Satellite Program

BOARD CONTACT

Julie Boucher
Coordinator of Curriculum Services
Halton Roman Catholic Separate School Board
802 Drury Lane
Burlington, Ontario
L7R 3Y2
632-6300

PROGRAM SUMMARY

As a result of the Primary/Junior Science Innovative Incentive Fund, the Halton Roman Catholic School Board implemented the Junior Science Satellite Program. Two satellite teachers were made available to work with the Junior division teachers in 17 English schools and 3 French schools for a period of two weeks to coach teachers in implementing a hands-on, activity-based Science program in their schools. Kits of materials were made available as were units in each of Physical, Life and Earth Science for each grade level.

One classroom in each school was designated a satellite classroom. It was used to set up an exemplary program. Teachers observed the program in this classroom and then worked with the satellite teacher in planning a similar program for their classroom. Once the satellite teacher left the school the Junior division teachers continued to assist each other though peer coaching. The program was extremely successful. The Board has extended the program this year to provide the same type of service to the Primary division.

LINCOLN COUNTY BOARD OF EDUCATION

TITLE

Science Innovative Implementation In-Service Project

FOCUS OF PROJECT

- to provide teachers with increased knowledge of scientific principles which will enable them to be more effective teachers of science
- to provide teachers with knowledge and experience in designing, implementing and evaluating science based activity centres and units of work
- to provide leadership opportunities for teachers to in-service and coach other teachers using the science materials developed
- to enable teachers to apply the inquiry approach in the teaching/learning of scientific concepts as outlined in *Shared Discovery* and *The Formative Years*
- to provide experiences in science that will encourage children to develop the skills, knowledge, and attitudes they need to meet the challenges of the future. These skills are also life skills and will help children strengthen and deepen their reasoning abilities
- to provide in-service sessions for all our principals using small group "hands on" participation as well as large group presentation
- to provide in-service for our librarians to enable them to become part of the *Science is Happening Here* In-Service Initiative.

TARGET GROUP

6 teachers on committee
22 Primary Resource Teachers

SPECIAL FEATURES

1) Consultant coached 6 Committee members on S.E.S. units.
2) Consultant and 6 committee members began coaching 22 Primary Resource Teachers.

BOARD CONTACT

Betty Adams
Lincoln County Board of Education
Education Centre
112 Oakdale Avenue
St. Catharines, Ontario
L2P 3J9
(416) 685-1551

PROGRAM SUMMARY

S.E.S. units were written and piloted by the 6 teachers on the Science Initiative Implementation In-Service committee. Needed additions and deletions were completed. In-Service sessions with our Primary Resource teachers were begun. The pre-test post-test was completed. A comparison for Ministry documents was prepared and presented for the In-Service sessions outline.

Our focus the first year was familiarity with Ministry documents and the skills sequence for the Inquiry Model in our S.E.S. Units.

NORFOLK BOARD OF EDUCATION

TITLE

Innovative In-Service Incentive Fund

FOCUS OF PROJECT

Initiating renewed interest in science in Norfolk

TARGET GROUP

Primary and Junior Teachers and Special Education teachers and Administration (300)

SPECIAL FEATURES

Leadership roles for exemplary teachers (curriculum development and workshop presentations). All teachers used 1 or more science units and kits in their classrooms.

BOARD CONTACT

J. G. Townsend
Norfolk Board of Education
Box 486
Simcoe, Ontario
N3Y 4L7
(519) 428-1880

PROGRAM SUMMARY

The Innovative In-Service Incentive Fund for Science in Primary and Junior Education has been an incredible stimulus for initiating a renewed emphasis on Science in Norfolk. As our original proposal indicated, our situation required building from the ground up.

The curriculum staff (Joan Fallis and Peter Rasokas) had to recruit a group of exemplary teachers who also had an interest and willingness to take leadership roles in Science, develop units of study that were appropriate for primary and junior students, pilot the units, assemble appropriate resources to be made available to all teachers and schools, and provide in-service to both administrators and teaching staff.

As a result of the funding, Science, as part of the total curriculum, has become integral to both teachers and students. The programs developed to this point are child-centred, self-directed and open-ended. The kits ensure that all students have an opportunity to work with hands-on materials in small group settings, developing a sense of, and confidence in scientific inquiry.

NORTH YORK, BOARD OF EDUCATION FOR THE CITY OF

TITLE

Coaching For Science

FOCUS OF PROJECT

Improvement of teaching practice related to implementation of *Science Is Happening Here*

TARGET GROUP

65 teachers and the administrators in 13 elementary schools

SPECIAL FEATURES

Peer Coaching

BOARD CONTACT

Ken Stief, Science Coordinator
Board of Education for the City of North York
5050 Yonge Street
North York, Ontario
M2N 5N8
225-4661

PROGRAM SUMMARY

This project used peer coaching to assist teachers to implement *Science Is Happening Here*, from January 1, 1988 to December 31, 1988. Teachers who volunteered attended a series of workshops designed to achieve two purposes: to explore ways in which to improve teaching practices in areas selected by teachers and to develop peer coaching skills. Workshops were designed to incorporate existing board curriculum resources (units and kits) and the policies in *Science Is Happening Here.*

PETERBOROUGH COUNTY BOARD OF EDUCATION

TITLE

Primary Science Summer School 1987

FOCUS OF PROJECT

Nature of science, teacher as learner, 3 strands of *Science Is Happening Here*

TARGET GROUP

Primary division teachers, principals and vice-principals, in-school resource teachers

SPECIAL FEATURES

Immersion in a science environment, identification of personal goals

BOARD CONTACT

C. Lane, Superintendent of Program
Peterborough County Board of Education
150 O'Carroll Avenue
Peterborough, Ontario
K9J 7A1
(705) 743-7431

PROGRAM SUMMARY

In a 5-day summer school (August 24-28, 9:30 - 1:30) participants were provided opportunities to actively explore materials and their environment, pose their own questions and engage in finding answers to those questions and communicating with their peers. The selection of materials and consideration of environments deliberately emphasized a balance of Life Science, Earth and Space Science and Physical Science.

With opportunities for reading, writing, discussing and reflecting, participants also had opportunities to consider language as a tool for learning, evaluation (self, peer group and teacher) and pupil-teacher "shared discovery".

Participants were asked to address such questions as:

- What materials and experiences are appropriate to a range of primary children? What development in skills, knowledge and attitudes is appropriate for those children? What school and community resources are available to support that development?

- What differences do young girls and boys bring to the classroom that affect science initiatives? What attitudes or values of the teacher consciously or unconsciously affect their concepts about science and the roles people play? What strategies can be developed and employed to overcome those that inhibit girls' full development in particular?

Special visitors were invited to provide background for the participants' activities and discussions. These included Patricia Blackburn (Library Resources), Henry Langley (Computers), Les Asselstine (Ministry), John Wadland (Trent University), Val Stief (North York), Anna Staples (Victoria), a representative from the Ministry of Natural Resources, a pet store owner and twenty-three children.

The notion of the teacher as learner/researcher was continued through the school year with teacher groups meeting after school to report and discuss their observations of children working and playing with specific materials.

PETERBOROUGH VICTORIA NORTHUMBERLAND AND NEWCASTLE ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Environmental Studies/Coaching

FOCUS OF PROJECT

Curriculum Implementation using a Coaching Model

TARGET GROUP

24 lead teachers (coaches) } from all 28
200 peer teachers } elementary
27 principals } schools

SPECIAL FEATURES

- Family of Schools Organization
- In-Service for Principals and Lead Teachers
- Lead/Peer teacher coaching sessions
- released time for all lead and peer teachers throughout the year
- Primary and Junior French Immersion and regular English classrooms are included

BOARD CONTACT

Don Folz, Superintendent of Schools
Peterborough Victoria Northumberland and Newcastle Roman Catholic Separate School Board
459 Reid Street
Peterborough, Ontario
K9H 4G7
(705) 748-4861

PROGRAM SUMMARY

Curriculum implementation is a three-year plan, its focus being:

a) to provide a stimulating child-centred and integrated curriculum
b) to develop informed teachers
c) to develop strong curriculum leadership within each school
d) to develop peer coaching skills among teachers

SCARBOROUGH, BOARD OF EDUCATION FOR THE CITY OF

TITLE

Primary/Junior Science Leaders' Seminars

FOCUS OF PROJECT

To provide sufficient in-depth in-service so that participating teachers will be confident in offering an integrated, hands-on science program, and assisting other teachers in their respective schools.

TARGET GROUP

Teachers of P/J grades - 40 participants - 6 sessions

SPECIAL FEATURES

- Hands-on experiences
- Participants worked in groups (co-operative learning)

BOARD CONTACT

Don Garratt - Co-ordinator of Science
Board of Education for the City of Scarborough
140 Borough Drive
Scarborough, Ontario
M1P 4N6
396-7864

PROGRAM SUMMARY

Participants attended 6 sessions, some during and some after school hours.

Session I	- Integrating Activity Science in Pr/Jr. Divisions
Session IIa	- Thinking Skills in Science
Session IIb	- Reading in Science
Session III	- Observing Children and Evaluating Progress in Science
Session IV	- Hands-on Science using Everyday Materials and Encouraging Girls in Science
Session V	- Toys, Tools and Machines in the Child's World

SIMCOE COUNTY BOARD OF EDUCATION

TITLE

K-6 Science Project

FOCUS OF PROJECT

Staff and Resource Development

TARGET GROUP

K-6 Teachers (30)

SPECIAL FEATURES

Staff development for an integrated child-centred program through field testing locally developed science kits.

BOARD CONTACT

C.H. Shanks
Simcoe County Board of Education
99 Ferris Lane
Barrie, Ontario
L4M 2Y2
(705) 728-7570

PROGRAM SUMMARY

Thirty K-6 teachers were involved as field testers of three new kits developed by Program Services. Three half-day workshops were held over the eight-week field test period. Teachers shared their experiences and concerns. The evaluation component for each kit was emphasized in the workshops.

The project resulted in the updating of the kits for use in the system and strengthening of teacher skills related to integrated programming.

SIMCOE COUNTY ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary/Junior Science In-Service

FOCUS OF PROJECT

To plan an in-service programme which would provide a wide variety of available resources and strategies that classroom teachers could easily integrate into their daily programme emphasizing an activity-based, child-centred approach to learning.

TARGET GROUP

Approximately 250 Primary/Junior teachers

SPECIAL FEATURES

To in-service one or two key teachers from each elementary school emphasizing networking as well as sharing of expertise, materials, etc. among the Primary/Junior teachers of the Simcoe County Roman Catholic Separate School Board.

BOARD CONTACT

Mr. D.G. Carroll
Superintendent of Schools - Programme
Simcoe County Roman Catholic Separate School Board
46 Alliance Boulevard
Barrie, Ontario
L4M 5K3
(705) 722-3555

PROGRAM SUMMARY

Mary Brett was seconded to the Board Office to head up the Ministry initiative regarding Primary/Junior Science Innovative In-Service Project, among other duties. A Steering Committee was established in September 1988 and the needs were determined. A Science Implementation Team was selected in December 1987. The Team met on four and a half planning days between January and July to establish a viable in-service programme for the key teachers. The Team attended the two Central Ontario Region in-service sessions in the Spring of 1988. In-Services of the principals regarding the Team's plans was completed in late Spring. A full day workshop on Science awareness regarding the policy statement *Science Is Happening Here* and active learning was given for the Junior teachers. The Team researched strategies for setting up a Science Kit programme for the County. Through Experience '88, this objective was met: ninety-five kits were made which flowed from school to school through September 1988 to June 1989. (Well over one hundred units of study were purchased from other boards through the Ministry initiative.) The Team supervised the kit-making summer project during July and August 1988.

WATERLOO COUNTY BOARD OF EDUCATION

TITLE

Science Innovative In-Service Project

FOCUS OF PROJECT

To develop and refine the teaching skills of a select group of teachers in the science component of the board's Environmental Studies program, and spanning the grades K-6.

TARGET GROUP

12 teachers, both male and female, grades K-6, English and French Immersion, from schools from a variety of geographical areas within the board.

SPECIAL FEATURES

Participants were encouraged to develop skills allowing them to become part of a leadership pool available to share their learning with others through professional development and in-service programs in the future. Project leaders used coaching techniques during the project. Videotapes were made of exemplary lessons by the participants for future use in implementation workshops and for use by individual teachers and staff.

BOARD CONTACTS

Doug Koegler, Jill Snider
Environmental Studies Department
Waterloo County Board of Education
51 Ardelt Avenue, Box 68
Kitchener, Ontario
N2G 3X5
(519) 742-1751

PROGRAM SUMMARY

June 1987: Invitation of K-6 teachers to apply for participation in the project.

September:
Information meeting of applicants to outline project objectives, selection criteria and timelines. Project leaders (4 consultants of the Environmental Studies department). Select 12 participants.

October - November:
An initial evening workshop in which the document Science is Happening Here was introduced. Three half-day workshops, in which presentations were made on ideas and suggestions for active learning from Physical, Life, and Earth-Space Sciences. A half-day workshop on video techniques.

December - January:
Individual participants used one day of release time to plan a specific unit to be taught during February. This time was divided between work with a project leader, and individual or group work with other participants developing similar or related units. Participants were encouraged to enlist support and assistance from their teacher-librarians and principals.

February:
Each participant taught a prepared unit, with coaching assistance from a project leader. Some parts of lessons and activities were videotaped, and later edited to about 10 minutes in length. Each tape focused on a particular facet of the teaching unit - e.g. activity-centred learning, outdoor activities, methods of unit planning, evaluation techniques, etc.

(continued)

March:
One half-day evaluation session, in which the February experience was reviewed, and modifications made for the next session.

March - May:
The pattern outlined for December to March was repeated. Each teacher selected and prepared for teaching in May a second unit with a strong science component from the existing Environmental Studies program. Again release time was provided for planning, both individual, and with project leaders, and sections of lessons were recorded on videotape during the teaching phase in May.

June:
One half-day evaluation session, and evening social event to wrap up the project.

WENTWORTH COUNTY BOARD OF EDUCATION

TITLE

In-Service To Promote Student-Centred Learning

FOCUS OF PROJECT

Inquiry model for science curriculum development

TARGET GROUP

Cluster group from ten schools to include: principal, teacher-librarian, 1 primary and 1 junior teacher

SPECIAL FEATURES

Integration across the curriculum

BOARD CONTACT

Wentworth County Board of Education
357 Wilson St. E.
Ancaster, Ontario
L9G 4B7
(416) 523-8621

PROGRAM SUMMARY

In-service was a combination of theory and practice using the inquiry model. Basic thinking skills were investigated. In-service focused on integration across the curriculum. The coaching model was introduced and participants were encouraged to continue the in-servicing at their home schools.

EASTERN ONTARIO REGION

EST DE L'ONTARIO

CARLETON ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Science In-Service Project

FOCUS OF PROJECT

Hands-on experience in conjunction with National Museum of Science and Technology (N.M.S.T.)

TARGET GROUP

29 schools - 1 class/school

SPECIAL FEATURES

- involvement of students and teachers
- cooperative endeavour with N.M.S.T.
- parent awareness

BOARD CONTACT

Ann Heide
S.P.A.T. Environmental Studies
Carleton Roman Catholic Separate School Board
1695 Merivale Road
Nepean, Ontario
K2G 3R4
(613) 224-2222

PROGRAM SUMMARY

The Carleton Roman Catholic Separate School Board chose to initiate a project with the National Museum of Science and Technology in order to accomplish the stated objectives of the project while, at the same time, raising awareness of this valuable resource and encouraging integration of museum visits into our existing program.

One class per elementary school was involved in a half-day program at the museum on one of the following topics:

Forensic Science	Magnets
Holography	Light
Robotics	Canada in Space

Teachers, students and parent volunteers were actively involved. Each teacher was provided with a resource document of follow-up activities to extend the experience back in the classroom. Teachers were also expected to present a brief P.D. activity at the school level, e.g. conduct classroom activities to which other teachers were invited, duplicate kit and present it at a staff meeting.

The programs offered by the Education and Extension Division of the N.M.S.T. are consistent with the philosophy and child-centred approach of our new Primary and Junior Environmental Studies curriculum documents. The topics co-relate with those included in our programs and the integrated nature of the units is also consistent with our package.

In the past, it has been our experience that prepared and packaged units or kits are not used to their greatest advantage due to lack of experience in how to implement. Providing teachers with an experience on which to model addressed this concern.

Due to the expense involved in transportation, our schools are sometimes reluctant to take advantage of the in-service potential of the N.M.S.T. This proposed project filled a joint need in terms of Science renewal and curriculum implementation.

FRONTENAC COUNTY BOARD OF EDUCATION and FRONTENAC-LENNOX AND ADDINGTON ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

The Science Club

FOCUS OF PROJECT

To raise the comfort level of teachers with science and teaching science.

TARGET GROUP

16 Primary Division teachers
21 Junior Division teachers

SPECIAL FEATURES

First, teachers were encouraged to participate in a broad range of hands-on activities. The idea behind this was that if teachers are to initiate hands-on science activities in their classrooms they must themselves have had first-hand experience of what it feels like to learn science in this way. Second, they were helped to learn how to engage in a form of action research involving reflection not only on their efforts to teach science but also their experiences in learning it.

BOARD CONTACTS

Mr. Horst Wohlgemut, Superintendent
Frontenac County Board of Education
220 Portsmouth Avenue
Kingston, Ontario K7L 4X4
(613) 544-6920

Mrs. Carol Weir, Superintendent
Frontenac-Lennox and Addington Roman Catholic Separate School Board
84 Stephen St.
Kingston, Ontario K7L 0Y5
(613) 544-4927

PROGRAM SUMMARY

During the first year the primary aims were to help teachers become more comfortable with science (since only a small number of them had taken a science course after high school) and to realize that good science can be done with hands-on activities using inexpensive and readily available materials.

Sixteen sessions, ranging in length between 1 1/2 and 3 hours, were conducted over the course of 7 months. Two all-day workshops were organized by David and Frances Hawkins and Maya Apelman, all of whom had had significant involvement with the Elementary Science Study (E.S.S.) in the United States. Regular meetings involved demonstrations by the board instructors or by invited guests. These were followed by "messing about" activities and later by teacher discussions of the activities tried. Towards the end of the year, following the purchase of suitable equipment, teachers began to videotape some of their lessons.

A participant observer from the Faculty of Education at Queen's University acted as the external evaluator for the program. The evaluator took part in all of the in-service sessions, kept a diary of significant happenings and interviewed the participating teachers at the end of the project's first year.

LANARK COUNTY BOARD OF EDUCATION

TITLE

Primary/Junior Science Lighthouse

FOCUS OF PROJECT

To develop a Lighthouse Team who would be knowledgeable in the philosophy of *Science is Happening Here,* and to develop science kits for county use. Also, to act as in-school coaches.

TARGET GROUP

15 Primary and Junior teachers

PROGRAM SUMMARY

The Lighthouse Steering Committee developed 15 Science Kits which they field tested themselves and the additional in schoool coaches were asked to field test them with coaching from Kit Developer.

SPECIAL FEATURES

Development and Implementation of Science Kits

BOARD CONTACT

John Aikman, Co-ordinator Curriculum and Professional Development
Lanark County Board of Education
15 Victoria Street
Perth, Ontario
K7H 2H7
(613) 267-4210 ext. 255 or 253

LEEDS & GRENVILLE COUNTY BOARD OF EDUCATION

TITLE

Innovative In-Service Incentive

FOCUS OF PROJECT

- to increase teachers' level of comfort in facilitating activity-based, child-centred classes and being interested and involved in scientific inquiry.
- to help teachers develop child-centred science programs and to maintain a focus on science throughout the school year.
- to make teachers aware of the need to consciously avoid sex-role stereotyping and the importance of role modelling a genuine interest in Science.
- to establish a network of "lighthouse" schools to provide in-service leadership for Science in other schools in the Board.

TARGET GROUP

- forty teachers from three junior divisions and four primary divisions from seven schools, representing families of schools in the Board.

SPECIAL FEATURES

- In-Service was predominantly school based.
- In-Service was on child-centred, activity-based strategies.
- Support was available for teachers from colleagues and resource personnel in applying new ideas to development and implementation of the program.
- The in-service was provided to school teams of teachers who formed a support group, allowing teachers to develop professionally through co-operative interaction.
- The in-service generated a network of "lighthouse" teachers who provided leadership in science in-service at the family of school level.
- Leadership opportunities were provided to female teachers.

BOARD CONTACT

Patricia Masson
Leeds & Grenville County Board of Education
25 Central Avenue West
Brockville, Ontario
K6V 5X1
(613) 342-0371

PROGRAM SUMMARY

Teachers involved in the pilot project were given opportunities to engage in discussion and co-operative development with colleagues and, with ongoing support, to put into practice ideas and techniques conducive to child-centred activity-based science.

To provide these opportunities, the pilot teachers were given in-service, planning time and some resources. Over the 1987-88 school year each school division involved in the project was provided with the equivalent of one planning day per teacher which gave opportunity for co-operative planning within the individual school setting. Throughout the year there was ongoing support from consultants, area and resource teachers. Resources in the form of books and materials were also made available.

In September of the 1987 school year all pilot project members gathered for a meeting at which the project objectives, structure and expectations of participants were outlined. Hands-on practical demonstrations were also shared with teachers and their principals.

In November teachers were released from classes in order to meet with other participating divisions. Small group meetings were held in each of the three geographic areas giving neighbouring participants opportunity to co-plan and engage in discussion.

To increase the teachers' levels of comfort in leading activity-based classes and in being interested and involved participants in scientific inquiry, the teachers were exposed to hands-on activities during in-service sessions. A "Science Magic" presentation held in February was one vehicle for hands-on science. Other lighthouse Boards were active in organizing centres for sharing with our board.

Each division of each of the pilot schools developed a science program for a specific topic and strategies for implementing the unit. By the end of Phase I, June 1988, a network of "lighthouse schools" at the family of schools level had been established. The teachers of these schools met with the teachers who will be involved in Phase II of the project. At this time experiences and finished products were shared. Each pilot school contributed one centre at which were displayed practical aspects of the unit which the teachers had developed. Also at the centre were a record of objectives, activities, strategies and outcomes of the teachers' endeavours.

The network of "lighthouse" schools established at the family of schools level provided leadership in the diversification of in-service to other schools within the Board and was available as a resource throughout Phase II.

Ten units were developed throughout the project which will be formatted and used throughout our system. A kit on magnets generated by one teacher will be duplicated for the schools. Pictorial and video accounts of activities were maintained.

LENNOX & ADDINGTON COUNTY BOARD OF EDUCATION

TITLE

Primary/Junior Science Project - Science Is Happening Here

FOCUS OF PROJECT

Promotion of *Science Is Happening Here* by emphasizing the use of the inquiry process, thinking skills and a hands-on approach in teaching science.

TARGET GROUP

Essentially the project group consisted of one primary and one junior division teacher from each school. The base group comprised 35 teachers.

SPECIAL FEATURES

The project involved key educational leaders: Dr. John Ross - O.I.S.E., Trent Valley Centre, Peterborough; Michael Harrison on motivation for Science; Wayne Seller - O.I.S.E., Northwestern Centre on coaching.

BOARD CONTACT

Lucille Macdonald, Resource Teacher
Lennox & Addington County Board of Education
264 Camden Rd., Box 70
Napanee, Ontario
K7R 3M1
(613) 354-3391

PROGRAM SUMMARY

The project focused on the processes of science through application of the inquiry model and emphasis on active learning.

Eight in-service sessions were held:

Session 1:	Michael Harrison - Motivation in Science
Session 2:	County Project Committee - Thinking Skills
Session 3:	John Ross - Measuring Student Progress
Sessions 4, 5 and 6:	Wayne Seller - Coaching
Session 7:	County Project Committee - Evaluation of the Coaching Implementation (it should be noted that Year I participants coached each other, i.e. Primary and Junior teachers at each school)
Session 8:	Pat Benton - TVO Applications in Science

In addition, project participants took part in two workshops coordinated for the system's Junior Division Renewal Project: "Project WILD" (conducted by the Ministry of Natural Resources) and "Ages 9 through 12" (led by Linda Pogue).

In summary, the foregoing provided an excellent theoretical background in science and set the stage for specific tasks in Year II.

OTTAWA BOARD OF EDUCATION

TITLE

Activity-Based Science in Primary-Junior Division

FOCUS OF PROJECT

To highlight themes/units that meet the learning opportunities from *Science Is Happening Here.*

TARGET GROUP

Primary Teachers 55; Junior Teachers 180

SPECIAL FEATURES

Workshops provided to teachers by consultant and resource teachers. Teachers attending three sessions produce an integrated learning centre to use in their classrooms.

BOARD CONTACT

Graham Wright, Science Consultant
Ottawa Board of Education
330 Gilmour Street
Ottawa, Ontario
K2P 0P9
(613) 239-2211

PROGRAM SUMMARY

An in-service programme for science was provided for Primary/Junior Teachers, Principals and Vice Principals. The objectives of the programme were:

1) To highlight the policy document *Science Is Happening Here* using a series of workshops.

2) To assist teachers to plan for a child-centre, activity-based science programme in their schools.

3) To assist principals recognize the components of such a programme (and how to recognize the levels at which such a programme is implemented in their school)

4) To develop a team of teachers and resource personnel who would provide leadership in science education over the next few years (Lighthouse network of Eastern Ontario).

5) To provide workshops which feature higher order thinking skills and problem solving relating to science.

Year one of this In-Service programme focused on the Junior Division and administrators (Principal/Vice Principal).

Part of the in-service funds were used to sponsor teachers on MOE P/J Science courses in Toronto and Kingston and to attend science conferences.

STORMONT DUNDAS AND GLENGARRY COUNTY BOARD OF EDUCATION

TITLE

Teachers Helping Teachers

FOCUS OF PROJECT

The initiation and co-ordination of a "Lighthouse Program" to involve teachers of Science in the sharing and exchange of ideas, methodology and resources.

TARGET GROUP

Primary/Junior Lighthouse teachers - 15
Primary/Junior Teachers involved in exchanges - 150

SPECIAL FEATURES

In-Service and training of Lighthouse teachers using workshops and planning sessions.

Teacher exchanges and coaching using workshops, class visitations and interdisciplinary sessions.

BOARD CONTACT

Gerrit Mollinga
Stormont Dundas and Glengarry County Board of Education
902 Second Street West
Cornwall, Ontario
K6H 5S6
(613) 933-6990

PROGRAM SUMMARY

1. A series of six regional Lighthouse Workshops were held in co-operation with surrounding Boards of Education. These sessions took place in Cornwall, Perth, Ottawa, Nepean, Kingston and Petawawa so that as many teachers as possible could participate.

   The sessions enable teachers to interact with their counterparts from other areas and exchange ideas and expertise.

2. Lighthouse teachers were sponsored at workshops and conferences:
   S.W.I.S. - Summer Workshop in Science (Ottawa)
   S.T.A.O. - Science Teachers Association of Ontario (London)
   Outdoor Educators of Quebec (Montreal)

   Teachers attending these workshops were able to present sessions at regional Professional Activity days as well as contribute to the Lighthousing sessions.

3. A "Lighthouse Committee" was formed to co-ordinate all activities including visits, planning and workshops.

4. A "Weather Kit" was developed. This Board incentive was intended to explore the feasibility of kit production at the local level to suit local needs.

   The in-service workshop held to launch the kit met with overwhelming response from the schools.

5. A Lighthouse "Learning Centre Celebration" was held for all participants in the program to review outcomes and evaluate successes. The presentation by Doug Paul, the workshops and the displays were attended by a large majority of lighthouse participants, and served as inspiring conclusion to Year I of the program.

An ongoing commitment to the Lighthouse concept has since resulted in the presentation of Networking Sessions so that teachers can continue to meet and share ideas.

MIDNORTHERN ONTARIO REGION

CENTRE-NORD DE L'ONTARIO

CHAPLEAU BOARD OF EDUCATION

TITLE

Science Is Happening Here

FOCUS OF PROJECT

To develop a new Science Curriculum for the Junior grades in 1987-88, to field test the curriculum in 1988-89 and full implement in 1989-90.

TARGET GROUP

Grades 4-6 in Chapleau Public School (80 students) and Sir James Dunn, Wawa (110 students)

SPECIAL FEATURES

The project was a cooperative venture by a curriculum writing team of 9 teachers from the public schools in Wawa and Chapleau.

BOARD CONTACT

Mr. Shane Wright
Chapleau Public School
Box 220
Chapleau, Ontario
P0M 1K0
(705) 864-1750

PROGRAM SUMMARY

The Michipicoten Board of Education and the Chapleau Board of Education established a joint Curriculum Writing Team to develop, during the 1987-1988 school year, a Science Curriculum for the Junior Division in both jurisdictions. The writing team was composed of interested Junior Division teachers from both Boards.

Members of the team met early in the school year to review the Ministry of Education's most current Science documents (*Science in the Primary and Junior Divisions* (A Support Document), 1983; *Science in Primary and Junior Education - A Statement of Direction*, 1986; and *Science Is Happening Here - A Policy Statement* (Draft Copy), 1987), to consider the resources available which would enhance the Science program in the local area, and to define the task to be undertaken.

Subsequently, core units for each Grade level were selected. A resource unit model was developed. Many hours of individual work were spent in completing the curriculum writing process.

Following the release, in the spring of 1988, of the final copy of the *Science Is Happening Here Policy Statement* (from which this curriculum package borrows its name), a review was undertaken of its contents and of the materials prepared to that point in time. The Introduction to *Science Is Happening Here* serves as a statement of our intent in preparing the package of materials.

A copy of the entire Science curriculum for grades 4-6 was given to the English separate schools in Wawa and Chapleau. A copy was also sent to the Regional Ministry of Education in Sudbury for reproduction and possible use in the small isolate school of Missanabie, Foleyet, Shining Tree and Gogama.

MICHIPICOTEN BOARD OF EDUCATION

TITLE

Science Is Happening Here

FOCUS OF PROJECT

An integrated real world approach to science that emphasizes child-centred activities, that addresses the needs of exceptional children, and that addresses the needs of girls.

TARGET GROUP

Teachers of grades 4, 5 and 6 (16)
Teachers of Kindergarten to Grade 3 and Grade 7 & 8 indirectly (21)

SPECIAL FEATURES

A unique "task group" organization was created by three northern boards to develop and implement a Junior Science Curriculum to meet the needs of our student population.

BOARD CONTACT

F. LeFeuvre
Michipicoten Board of Education
P.O. Box 560
Wawa, Ontario
P0S 1K0
(705) 856-2517

PROGRAM SUMMARY

Development

The Task Group for each level will organize a six-day task schedule. Day one would be for individual planning and preparation; days two to five inclusive would be for joint meetings of each Task Group for program development; and day six would be for presentation to the rest of the development team.

It is understood that Task Group members will complete individual curriculum work between the Task Group sessions. Each Task Group will present a report, along with their product to the full development group (Grade 4, 5 & 6) and principals involved.

Pre-Implementation

Field testing is done the year after the curriculum has been developed. Both positive and negative aspects of the produced curriculum are noted by the teachers. In the spring of the Pre-Implementation year, the Task Groups meet for one day to review the documents and revise where applicable. Revised outlines are presented once again to the full development group and principals during a half day meeting at the end of May.

Implementation

Before implementation begins, the developed curriculum is presented to the boards for approval; June is the target month. Full implementation occurs the year after the curriculum is recommended again in a two- to four-year period.

SAULT STE MARIE BOARD OF EDUCATION

TITLE

Innovative In-Service Project

FOCUS OF PROJECT

Science in an active learning environment

TARGET GROUP

Junior Division Teachers (2 per school)
Principals
Also: Librarians, Classroom Teachers (total of 37)

SPECIAL FEATURES

- collaborative effort with F.W.T.A.O.
- networking sessions
- curriculum development
- in-service session for principals
- visitations to other schools
- ongoing support

BOARD CONTACTS

Kathy Pettit
Sault Ste Marie Board of Education
644 Albert St. East
Sault Ste Marie, Ontario
P6A 2K7
(705) 945-7111

PROGRAM SUMMARY

Under the guidance of Bonnie Morrison, Consultant, Simcoe County Board of Education, teachers participated in a series of workshops focusing on science in an active learning environment.

As a direct result of the work done in these sessions, teachers in the project carried out hands-on, integrated science units in their classrooms on the following topics:

Shapes and Structures
Light and Colour
Mystery Powders
Electricity
Outdoor Education
Water
Rocks and Minerals
Oceans
Space

In addition all project participants were trained in the use of Project Wild Curriculum through the Ministry of Natural Resources, and two members received training for that resource.

As a direct result of this project, many changes occurred in the eight schools involved in terms of program, classroom management and changes in the teacher's role.

The first year of this project has been extremely positive. Teachers are looking forward to continued growth in Year II.

SUDBURY DISTRICT ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Innovative In-Service Program

FOCUS OF PROJECT

To in-service teachers with regard to the philosophy and strategies of the Policy Statement, *Science Is Happening Here.*

TARGET GROUP

K-6 teachers
Special Education teachers
Approximately 225 teachers

SPECIAL FEATURES

First year focused on in-service of teachers by teachers in small group settings

BOARD CONTACT

Mr. Rino Ouellette
Sudbury District Roman Catholic Separate School Board
201 Jogues Street
Sudbury, Ontario
P3C 5L7
(705) 673-5621

PROGRAM SUMMARY

The first aspect of the program involved the eight members of the Innovative In-Service team becoming intimately familiar with *Science Is Happening Here* and the direction of Science education.

Following this phase, a gap analysis of the content, equipment and strategies was completed. Now, with the necessary background the team in-serviced their colleagues as to the philosophy and strategies of *Science Is Happening Here*. The presentations stressed "hands-on" activities to support the philosophy of the document.

NORTHEASTERN ONTARIO REGION

NORD-EST DE L'ONTARIO

COCHRANE-IROQUOIS FALLS, CONSEIL DES ÉCOLES SÉPARÉES CATHOLIQUES ROMAINES DU DISTRICT DE

TITRE

L'enseignement des sciences aux cycles primaire et moyen

OBJECTIFS

Sensibilisation:
- rencontre de l'enseignement
- intégration des matières
- centrée sur l'enfant
- organisation spatiale de la salle de classe et de l'horaire

GROUPE CIBLE

Enseignants(es) de l'élémentaire

CARACTÉRISTIQUES

Rencontres

LIAISON (au conseil scolaire)

Mme Nicole Guay
Conseil des écoles séparées catholiques
du district de Cochrane-Iroquois Falls
C.P. 858
Iroquois Falls "A", Ontario
P0K 1G0
(705) 232-4061

RÉSUMÉ DU PROGRAMME

1. Journées pédagogiques:

   25 septembre: rencontre avec 4 enseignants(es) - 2 enseignants(es) de 4e, 1 enseignants(es) de 4e-5e, 1 enseignants(es) de 5e-6e

   23 octobre: rencontre avec 5 enseignants(es) - présentation du thème "La matière"

   29 janvier: rencontre à Val Gagné (5 enseignants(es) et 1 directeur) - enseignement qui vise le développement des habiletés (plus Blanche Doucet)

2. Rencontres individuelles avec les enseignants(es):

   septembre: Cochrane - Lucienne Robichaud (4e), Claude Gaureau (4e-5e)
   Iroquois Falls - Suzanne Castonguay-Cadieux (4e)
   Val Gagné - Lisette Brochu (5e-6e)

   novembre: Iroquois Falls - Suzanne Castonguay-Cadieux (La matière), Cécile Dumont (La matière)
   Val Gagné - Lisette Brochu

   janvier: Suzanne Castonguay-Cadieux, Cécile Dumont, Lisette Brochu (1/2 journée), Blanche Doucet (29 janvier)

   février: Lisette Brochu (Le magnétisme), Robert Périgny à Ramore (étudie possibilité d'intégrer un programme des Sciences avec ordinateur)

   mars: Suzanne Castonguay-Cadieux, Cécile Dumont, Lisette Brochu (compte-rendu)

avril: Cochrane - Suzanne Lalonde (L'électricité) (1/2 journée)
Iroquois Falls - Suzanne Castonguay-Cadieux et Cécile Dumont (compte-rendu)

mai: Rencontre avec Suzanne Lalonde à Cochrane
Rencontre avec Blanche Doucet à Iroquois Falls

juin: Suzanne Lalonde (compte-rendu)
Pierrette (Kirkland Lake) (Le magnétisme) (compte-rendu)

3. Rencontres avec coordonnateurs(trices):

Francine Chartier: rencontres reguliers (service à l'étudiant)
Robert Périgny: informatique (2 rencontres)
Claude Mongeon, technicien en audio-visuel): photos et vidéos (6 rencontres)
Louise Trahan, conseillère (Kirkland Lake): stratégies, matériel pour enseignants(es) (2 rencontres)

4. Rencontres avec directeurs:

Robert Roy (Cochrane)
Denis Rancourt (Iroquois Falls)
Normand Perreault (Val Gagné)
• rencontres coïncidant avec les rencontres individuelles des enseignants(es)

5. Rencontres avec directeur d'éducation:

Rencontres régulières au moins 1 fois par mois

6. Rencontres avec l'agent d'éducation:

Jacques Larochelle - à deux reprises pour fin d'orientation

7. Consultation avec Conseil de Hearst:

Rencontre avec Blanche Doucet: le 29 janvier à Val Gagné
le 3 janvier à Iroquois Falls

8. Conférences:

Symposium à North Bay, en novembre, 1987
Scientifête à Ottawa, en mai, 1988
Un jeu d'enfant à Kapuskasing le 24 mars, 1988

HEARST, CONSEIL DES ÉCOLES SÉPARÉES CATHOLIQUES ROMAINES DU DISTRICT DE

TITRE

Les années de formation (sciences élément déclencheur)

OBJECTIF DU PROJET PILOTE

a) Développer des techniques afin de comprendre et de maîtriser
   i) le processus d'apprentissage par investigation
   ii) le processus d'enseignement par observation et
   iii) les techniques d'intervention
b) S'entraider mutuellement à expérimenter l'approche thématique
c) Effectuer des expériences scientifiques en raison de l'âge des élèves

GROUPE CIBLE

Cycles primaire et moyen et 1 personne à la direction 12 personnes

CARACTERISTIQUES

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LIAISON (au conseil scolaire)

Blanche B. Doucet
Conseil des écoles séparées catholiques du district de Hearst
923 rue Edouard
C.P. 1660
Hearst, Ontario
P0L 1N0
(705) 362-4337

RÉSUMÉ DU PROGRAMME

Le projet se découpe en tranches annuelles pour une période de cinq ans aux cycles primaire et moyen.

Les personnes impliquées dans le projet reçoivent de la formation en cours d'emploi pour parfaire leurs stratégies pédagogiques.

Par la suite, ces classes deviennent des classes-pilotes où l'enseignement est beaucoup plus centré sur les besoins des enfants.

NIPISSING BOARD OF EDUCATION

TITLE

Primary/Junior Environmental Studies Project

FOCUS OF PROJECT

Planning Environmental Studies curriculum in school-based projects supported by Board-wide involvement in-service related to inquiry learning and classroom methodology.

TARGET GROUP

JK to Grade 6 teachers and principals from 18 schools (approximately 170 teachers)

SPECIAL FEATURES

Primary:

- team building in schools around planning of environmental studies units and kits
- optional involvement in Primary Additional Qualifications course
- Environmental Studies presentations and discussions in 3.5 P.A. Days and 6 after-school meetings for all primary teachers
- development of 19 primary Environmental Studies units

Junior:

- team building in-schools around planning of Environmental Studies units and kits
- a Junior consultant working with each team
- Environmental Studies workshops on 3.5 P.A. days and after-school presentations by junior teachers who developed exemplary studies units

BOARD CONTACT

Paul Moffat, Superintendent of Education (Program)
Nipissing Board of Education
P.O. Box 3110
North Bay, Ontario
P1B 8H1

PROGRAM SUMMARY

Primary

1. A committee of teachers, principal, consultant and superintendent developed an exemplary unit for children in JK to Grade 3 using an environmental topic; this unit demonstrated an integrated approach, a balance in teacher-directed and child-directed activities and an approach to planning knowledge and skills objectives. It was based on growth schemes for observing and planning for children in inquiry and a very short staff manual.
2. Teachers in each school worked in a team to develop an environmental studies unit. As they worked they developed knowledge about child development through the primary division, knowledge and skills for a planned activity and adapting that activity to skills at different levels, classroom methodology to promote active learning.

3. Teachers spent a great deal of time planning the visit in meetings after 4:00 p.m. and also attended P.A. day and after-school sessions on: inquiry skills from Shared Discovery, Project Wild, communication with parents, physical science workshop. They shared activities from the units with each other after each school attempted to implement their own planned unit.

4. Approximately half (50) of the teachers registered in one of two Primary Additional Qualifications courses with Nipissing University. Courses were planned to include time in evening sessions and also Board P.A. day sessions. One of the course assignments was the development of a unit.

5. The units were published and kits compiled according to the writers' plans. These are now available to all teachers through our Learning Materials Centre. A teachers' observation guide for inquiry learning has been refined and is being introduced. An inquiry folder for late primary children is frequently used.

Junior

1. Junior consultant developed an exemplary unit and a board environmental studies junior staff manual. This included descriptions of knowledge, inquiry skills and attitudes to be developed in any junior environmental studies program.

2. Teachers in each school developed a scope and sequence chart for the Junior division: the program topics for each grade included units in matter and technology, earth and space science, living things, past times, beyond our borders, our community in Canada.

   Teachers selected a topic at one grade level and developed a written unit and kit around this topic.

   In writing the unit the teachers became more knowledgeable about inquiry, about topic elaboration and about some methodology for active learning and an integrated approach. In addition there was the opportunity for exchange of views and discussion about children's learning and classroom methodology. The document *Science Is Happening Here* was a major focus for thinking. Consultants worked closely with each Junior team.

3. The teachers spent a great deal of time in school meetings after 4:00 p.m. and in addition attended several P.A. Day sessions where they also worked with all teachers in the Board on understanding the inquiry process through such activities as: Junior teachers sharing successful units and activities, Project Wild, grade level discussions, physical science workshops, creative problem solving and group work in the junior division.

4. The 23 school units were published and kits prepared for use by all teachers. These units are now available at the Board office, and teachers are able to call on the expertise of the writers of the units when implementing a unit in their classroom. An inquiry foldout for students is in use at the early junior level and a cumulative folder for student planning and self-evaluation is being piloted at the late junior level.

TIMMINS DISTRICT ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Report on Extension of 1987-88 Progress

FOCUS OF PROJECT

A "child-centred hands-on" approach for each unit in the following areas:
Light and Shadow (Grade 1)
Trees and Leaves (Grade 2)
Animals and Insects (Grade 3)
Solar System--Sound (Grade 4)
Magnetism (Grade 5)
Electricity (Grade 6)

TARGET GROUP

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SPECIAL FEATURES

Developmental Science units with related in-service

BOARD CONTACT

Ron Edmonds
Superintendent of Education/
English Language Schools
Timmins District Roman Catholic
Separate School Board
35 Birch St. South
Timmins, Ontario
P4N 2A5

PROGRAM SUMMARY

The first draft units were completed by June 1988. The document *Science Is Happening Here* was used as a guide in developing the philosophical basis for these units. In the beginning, our Science Curriculum Committee decided that 26 units would have to be developed to complete the Science programme between grades 1 and 6. Thus far, seven have been completed and the objective for the year 1989 was to complete twelve more units. This not only includes the development of material, but the implementation format which includes in-service training, follow-up workshops, acquisition of new material and general involvement of staff.

The committee's work will be concentrated in the three areas of Life Science, Physical Science and Earth Science with unit examples such as Pond Life, Simple Machines, Water, Air, Weather, Pollution, Soil, and Bubbles fitting into each respective area. It is interesting to note that the committee, consisting of six female and six male teachers, has expressed the desire to continue working in this development stage of curriculum regarding science.

In reviewing the objectives set forth in the original proposal, it appears that great progress and achievements have been made. The establishment of the Science Curriculum Committee provided the avenue for teachers to express their talents in the curriculum development process. Searching for materials, examining prepared documents, tuning in to Ministry directions, communicating with fellow staff members regarding the science directions, all promoted personal and professional development as well as acquiring general knowledge of science as it applies in the education and societal arenas. The conferences and workshops that were scientifically oriented and that contained any element related to technological issues were accessed by many staff members. More and more female staff members took advantage of these opportunities, shedding some of the reluctance that was evident previously.

The in-service programme related to the technologies in computers and the "hands-on" approach to the science programme has, I believe, induced a more positive attitude toward the teaching of science in the schools and to science in general. Furthermore, I think that the programme has increased teacher knowledge of the "non-traditional" positions available

for female students and for women in general. Ultimately, all of the students will benefit from this knowledge and experience.

Another offshoot from the project was the acquisition of more and varied teaching materials that were and are available on the market for science programmes. I think that the teaching staff was exposed to more opportunities of reading scientifically developed materials. Teaching strategies, especially in "child-centred" approaches and "hands-on learning", are starting to develop more frequently about the system.

WEST PARRY SOUND BOARD OF EDUCATION

TITLE

West Parry Sound Primary/Junior Science Project

FOCUS OF PROJECT

Thinking skills

TARGET GROUP

All P/J teachers in the system (70)

SPECIAL FEATURES

Audiotaped workshops to try out model lessons with small groups of students.

BOARD CONTACTS

Richard Poole
West Parry Sound Board of Education
70 Isabella St.
Parry Sound, Ontario
P2A 1N2
(705) 746-9371

PROGRAM SUMMARY

An interdisciplinary skills list was adapted for project use from the *Cognitive Skills Development Manual* in the Intermediate/Senior History Guideline. Workshops were conducted with all P/J teachers in the adequacy of the skills list to handle comparative and causal problem solving by students.

Science contact teachers from each school were the recipients of in-service for instructional strategies to strengthen student performance in causal problem solving.

NORTHWESTERN ONTARIO REGION

NORD-OUEST DE L'ONTARIO

ATIKOKAN BOARD OF EDUCATION

TITLE

Renewal of Primary/Junior Science Curriculum

FOCUS OF PROJECT

Revising Junior Kindergarten-Grade Six Science Curriculum

TARGET GROUP

Primary/Junior Staff (18)

SPECIAL FEATURES

A small committee representing Atikokan JK-Grade Six staff examined present curriculum and the revised edition of the Lakehead District Roman Catholic Separate School Board curriculum.

BOARD CONTACT

Dennis Brown, Principal
Atikokan Board of Education
Atikokan, Ontario
P0T 1C0
(807) 597-6941

PROGRAM SUMMARY

The overall objective of the project is to improve the quality of science instruction in the Primary and Junior grades. This is a long term objective and will not be readily verifiable for some time to come, as the processes unfold.

More immediate and more specific were the objectives of curriculum renewal, staff awareness, and continued development of the balanced integrated approach to learning which we try to follow in our primary and junior grades.

a) Curriculum Renewal

The present document, upon which the science programs have been based, came from Lanark, Leeds and Grenville counties. This document was being compared with the new Policy Statement *Science Is Happening Here.*

During the school year 1987-88, teachers at the various grade levels did a "gap analysis". They tried to determine how the new document differs from the presently used documents in terms of processes and objectives.

This renewal process is incomplete. The *Science Is Happening Here* statement was positively received, as it fit into the concept of learning which we have been pursuing for several years. We believe in the active-learning and child-centred approaches. The new document brought some fresh ideas to the processes that we are already committed to (Grouping, Use of Computer, Integration, Play, Problem Solving and the Whole Language Approach).

b) Staff Awareness

Most of our time during Year I was spent making all staff aware of the approaches in the *Science Is Happening Here* document. We held teacher meetings within our Board. We made visits to schools in Thunder Bay, Toronto and Fort Frances. We attended orientation workshops given by the Ministry of Education. We brought in consultants from the Ministry of Education and from the North York Board to help us with the professional development, staff awareness process. Two primary staff members attended a Primary Methods course in London, England and visited Primary Schools there.

In-service was aimed at analyzing and refining the use of the balanced approach to learning. The main thrust of two planning days in June was to explore what we presently do, and what we might do differently in relation to:

- learning experiences
- activities that cater to a range of abilities and learning styles
- activities that are teacher-initiated and directed, activities that are child-initiated and directed.
- experiences for the whole class, small groups and the individual child
- teacher and peer group evaluation
- science, whole language, play, interaction

FORT FRANCES-RAINY RIVER BOARD OF EDUCATION

TITLE

Primary/Junior Science In-Service

FOCUS OF PROJECT

Implementation of instructional strategies that promote the processes of science identified in *Science Is Happening Here*

TARGET GROUP

74 teachers (K to 6)

SPECIAL FEATURES

Withdrawal in-service programs, peer coaching, and Implementation Steering Committee

BOARD CONTACT

Merv Ahrens
Fort Frances-Rainy River Board of Education
522 Second Street East
Fort Frances, Ontario
P9A 1N4
(807) 274-5366

PROGRAM SUMMARY

During Year I of the Innovative Science In-service program for the Primary and Junior teachers, efforts were made to select and in-service a key science teacher committee. Two withdrawal in-service workshops were conducted for this purpose. A total of thirty-one teachers participated in these training sessions and each teacher gained first-hand experience working through numerous learning opportunities identified in the 1988 science guideline. Emphases were placed on making teachers aware of the thrusts in the Ministry's policy statement *Science Is Happening Here.*

Following these initial workshops, a smaller science curriculum key teacher committee was formed. This group, in two subsequent sessions, undertook an in-depth review of the policy statement. A large collection of other Ontario boards' science curricula for the Primary and Junior levels was reviewed. District program goals, aims and a Plan of Action were identified and teacher in-service needs were further clarified. Plans for additional in-service for the fall term were finalized.

Considerable information and skills on managing curricular changes were gathered by the project leader attending a Planning for curricular Changes conference in Toronto. This information was communicated, via numerous mini-workshops, to the teachers and principals across the district.

Budgetary considerations resulted in part of Year I's subsidy being carried forward to the 1988 fall term.

KENORA BOARD OF EDUCATION

TITLE

Science Innovative In-Service

FOCUS OF PROJECT

Interaction of process and content to promote active learning

TARGET GROUP

Primary/Junior teachers (approximately 80)

SPECIAL FEATURES

Strategies included coaching, school based projects, individual training and in-service.

BOARD CONTACT

Pat Wyder
Kenora Board of Education
100 First Avenue West
Kenora, Ontario P9N 3Z7
(807) 468-5571

PROGRAM SUMMARY

This grant was received for the year 1987-88 and during this year we attempted to follow our plans laid out in the proposal for funding submitted in the spring of 1987. On the morning of October 16th, Mr. Les Asselstine from the Ministry of Education, Toronto and Mr. Jim Clark, Ministry of Education, Thunder Bay met with our staff, and, through hands-on activities and discussion demonstrated the process of science and showed that the materials you use can be taken from the environment at very little cost. In the afternoon they visited some schools where materials were being made into kits to provide the hands-on activities for students.

On February 12th, school-based activities centered on science, continued the development of kits and the sharing of ideas.

There was some delay in receiving the completed document *Science Is Happening Here* but the newly established science committee commenced its work with an in-service with Wayne Seller on orientations to curriculum and things to consider when working on a document. This was the first time that formal in-service of this nature was held for a curriculum committee. It is our view that any committee working on curriculum issues should have an in-service so that they understand how their work fits into the whole curriculum pattern.

The committee ordered a number of documents from the catalogue that lists resource document available from school boards in Ontario that would support the draft document *Science Is Happening Here*. The purchase of this material was on a 50-50 cost sharing basis between the Ministry of Education and the Board of Education. On receipt of these documents, the committee assessed them and developed a catalogue for inclusion in the revision of our Board science document.

On receipt of the completed *Science Is Happening Here* document the committee did a careful study of the primary and junior division sections and brought them into line with our Board document that was produced about three years ago. Prior to completing this process, the committee attended the Ministry of Education's in-service with Jim Clarke along with our administrative and curriculum people held at the Inn of the Woods. Subsequent to this meeting the committee met to complete the revision of the Board document for printing during the summer.

During one of our P.A. Days in June this committee will meet with grade groups to inform, and interact with staff on issues relating to the science program.

Next year the emphasis will be on implementation, sharing and coaching according to the proposed plans submitted and approved by the Ministry.

LAKEHEAD BOARD OF EDUCATION

TITLE

Serious on Science

FOCUS OF PROJECT

In-service to teachers in life science, physical science, earth and space science and technology.

TARGET GROUP

All Primary and Junior educators (500)

SPECIAL FEATURES

Supply coverage was made available to each participant and those teachers became "coaches for science" in their home schools.

BOARD CONTACT

Carolyn Carlson, Curriculum Officer
The Lakehead Board of Education
2135 Sills Street
Thunder Bay, Ontario
P7E 5T2
(807) 625-5100

PROGRAM SUMMARY

In September a schedule of activities was confirmed and in-service sessions were organized for physical science, technology, life science and earth and space science. The physical science in-service consisted of a presentation by SEEDS focusing on classroom activities related to energy. In the technology area the emphasis was the availability and use of computer software. Teachers were taught how to integrate computer activities into their school program. For life science Doug Judson from Fort Frances presented units that encouraged teachers to use the environment as a resource. Doug Paul from North York provided the in-service for Earth and Space Science. The key feature of his session was the progression from concrete to abstract ideas that would help students understand the universe.

WESTERN ONTARIO REGION

OUEST DE L'ONTARIO

GREY COUNTY BOARD OF EDUCATION

TITLE

Fostering Teacher and Public Awareness in Science

FOCUS OF PROJECT

- To encourage teachers to make science an integral part of their curriculum
- To help teachers provide science experiences that will encourage children to develop attitudes, skills and knowledge that they can use both today and in the future

TARGET GROUP

Primary and Junior Teachers
(approximately 350)
Primary and Junior Students
(approximately 6800)

SPECIAL FEATURES

- Peer Coaching
- Public Awareness Campaign
- Leadership Roles for Women in Science

BOARD CONTACT

Susan Sankey
Special Assignment Teacher,
Primary/Junior Division
Grey County Board of Education
P.O. Box 100
55 Victoria Street
Markdale, Ontario
N0C 1H0
(519) 986-3410

PROGRAM SUMMARY

- The K-6 Science Task Force was struck during the fall of 1985. This task force has been actively encouraging science in the Primary/Junior divisions and developing resources to assist in the delivery of such programs. The implementation of *Science Is Happening Here* became the responsibility of this task force.
- Four flyers were developed encouraging parents to have science-related experiences with their children, including sample experiments.
- "Science - Try It!" logo was designed to promote science through displays, workshops, publications and buttons.
- Various in-service activities were held highlighting the use of science kits, promoting science in a child-centred integrated program for English and French Immersion teachers.
- Leadership roles for women in Science have included chairing the K-6 Science Task Force, organizing and presenting workshops, training as peer coaches, serving as workshop leaders and delegates at conferences.
- The In-school Peer Coaching Model (W. Seller, OISE) was adopted as a strategy for implementing *Science Is Happening Here.* Members of the task force were trained as peer coaches. The model was introduced to Grey County staff by Wayne Seller during two days of workshops in April 1988.

HURON-PERTH ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Science in Primary & Junior Education

FOCUS OF PROJECT

To assess present Board Curriculum in relationship to *Science Is Happening Here* and develop a new Primary/Junior Science Curriculum

TARGET GROUP

7 committee members

SPECIAL FEATURES

Development of a new Primary/Junior Science Curriculum for piloting and in-servicing during 1988-89 school year.

BOARD CONTACT

G. Blanchette
Huron-Perth R.C.S.S. Board
Box 70
Dublin, Ontario
N0K 1E0
(519) 345-2440

PROGRAM SUMMARY

Our Primary/Junior Science Committee reviewed the Ministry document *Science Is Happening Here*, our present Primary/Junior Science Curriculum document and materials obtained from other Boards. The writing team drafted a new Primary and Junior Science Curriculum Document during the month of July for piloting during the academic year 1988-89.

LAMBTON COUNTY BOARD OF EDUCATION

TITLE

Board In-Service Team

FOCUS OF PROJECT

In-servicing of a Primary/Junior Science Team. This team would develop long range plans for the implementation of the Ministry's science policy statement *Science Is Happening Here.*

TARGET GROUP

Primary/Junior Science Team - 25

SPECIAL FEATURES

- Coaching
- Emphasis on development of female leadership in the in-servicing of science
- Inter-Board school visitation

BOARD CONTACT

Ted Stewart, Curriculum Co-ordinator
Lambton County Board of Education
200 Wellington Street
Sarnia, Ontario
N7T 7L2
(519) 336-1500

PROGRAM SUMMARY

To ensure system continuity and direction in Science, a Primary/Junior Science Team was formed. This team was made up of a principal and/or a Primary and Junior teacher from the same school. Eight different schools had representation on the Science Team. The total representation included one regional superintendent, a Primary consultant, a Junior consultant, eight principals, seven Primary teachers and seven Junior teachers. The team's objective was to build a network at the school level and then use the school team to network at a system level.

Stage I Input sessions for the Science Team included:

- a visit to Metro Toronto schools;
- participation at the STAO conference (fall '87), FWTAO Science Conference (fall '87);
- in-service session conducted by Les Asselstine on the new Ministry document;
- in-service conducted by Wayne Seller on the coaching model;
- in-service session conducted by Rod Peturson. The team was also involved in the in-service of Primary and Junior teachers on the same day. The Primary/Junior Science Team continued to have input into the long range planning during Year II.

LONDON BOARD OF EDUCATION

TITLE

Integrated Science Themes

FOCUS OF PROJECT

Initiation and implementation of eight integrated, child-centred science instructional units supported by manipulative kits

TARGET GROUP

Primary and Junior classrooms in London

SPECIAL FEATURES

All units developed have the support of hands-on manipulative materials. Resources are organized to complement an integrated classroom. Three teacher release days were provided for each writing team.

All units developed have the support of hands-on manipulative materials. Resources are organized to complement an integrated classroom. Three teacher release days were provided for each writing team.

Learning opportunities at our outdoor environmental centres were offered to support the new units.

A Science Task Force was formed to advise project leaders.

BOARD CONTACTS

Joanne Morton/Irene Pollock
Board of Education for the City of London
Education Centre
1250 Dundas Street
London, Ontario
N6A 5L1
452-2033

PROGRAM SUMMARY

1. Six theme areas were identified from *Science Is Happening Here*, and a half-day in-service sharing session was held with 15 teachers.

2. Writing teams of 3 to 5 teachers were created to develop at least 6 activity-based units to be completed by the end of Year II. Three release days for each team were provided.

3. As they developed, new units were piloted in classrooms of writing team members and other selected classes. English and/or French resources complemented these units.

4. Leadership roles were encouraged by having writing team members present several in-service workshops for their units during professional development days and after-school sessions.

5. To support the integrated "hands-on" approach to Science in London classrooms, Primary and Junior teachers were offered professional development sessions given by professionals in this field.

WINDSOR, BOARD OF EDUCATION FOR THE CITY OF

TITLE

Primary/Junior Science In-Service Project

FOCUS OF PROJECT

To establish and cultivate in-school leaders for staff development with respect to *Science is Happening Here*

TARGET GROUP

Twenty-one Primary/Junior teachers - each representing a different school

SPECIAL FEATURES

The team was established and developed on an in-school coaching model. All teachers chosen to participate were generalists - none had taught or were teaching intermediate science.

BOARD CONTACT

Rod Peturson
Co-ordinator: Primary/Junior Programs
Board of Education for the
City of Windsor
451 Park Street West
Windsor, Ontario
N9A 6K1
(519) 255-3200

PROGRAM SUMMARY

Twenty-one teachers participated in in-service sessions (seven day, three after-school and one evening) and explored the nature of science learning opportunities in a balanced and integrated curriculum approach. This focus on science was married to our own implementation of our child-centred, activity based program. A combination of Board personnel, outside guest presenters (Dr. Mary Budd Rowe, Joe Abruscato, Verne Rockcastle, Bill Brennan, Dr. David Suzuki, Dr. Don Maxwell, Dr. Larry Schafer, Gretchen Alexander) and the participants themselves provided a wealth of opportunities to explore hands-on science. Each participant received a number of current science resource books and studies and a subscription to an excellent PJ Science journal (Science and Children).

Each teacher was able to attend a science related conference (up to three days) and encouraged to share their experiences and perceptions.

The Windsor Board is entering a curriculum development phase in all of its Primary/Junior programs and these twenty-one teachers will be instrumental in modifying and implementing/coaching with in-school staff.

WINDSOR ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary Junior Science Initiative

FOCUS OF PROJECT

In year I the emphasis was placed on:

1. Establishment of a science steering committee
2. Professional Development of Principals
3. Professional Development of Junior teachers (Key Science Teacher)
4. Generation of support documents

TARGET GROUP

1. Steering Committee - 8 (2 principals, 5 teachers, 1 consultant)
2. Principals - 45
3. Key Junior Science Teachers - 45
4. Junior Teachers - approximately 150

SPECIAL FEATURES

1. The steering committee ensures input from different segments of the Board, i.e. principals, teachers, resource teachers, consultants.
2. Principals were asked to designate one teacher on their staff as Key Junior Science Teacher. This person attended all the workshops and reported to the other Junior teachers on staff. The Professional Development sessions were held during school time.
3. The Science Steering Committee with input from the Key Science Teachers produce a "Science Umbrella Document". After input these key teachers were asked to spend time developing science units which related to this document.

BOARD CONTACT

Mr. Ron Dywelska, Consultant
Windsor Roman Catholic Separate School Bd.
1485 Janette Avenue
Windsor, Ontario
N8X 1Z2
(519) 253-2481 ext. 270

PROGRAM SUMMARY

1. The steering committee was chosen and this group spent three work sessions reading and discussing draft copies of *Science Is Happening Here.* These discussions served to provide members with a common understanding of the Ministry expectations for Science.
2. With this common background the steering committee devised a course of action.
3. In the fall of 1987 parallel workshops were run for principals and key science teachers (one from each school) to:
   a) familiarize this group with *Science - A Statement of Direction 1986* and *Science Is Happening Here*
   b) obtain a science materials inventory from each school
   c) establish a consensus of opinion on the production of a Junior Science Overview document
4. The Science steering committee produced a Junior Science Overview document for presentation to the Key Science Teachers.
5. After revision this document was acceptable as a Board statement of direction in science. Key Science teachers were then given the opportunity to develop support documents congruent with overview documents.

PRIMARY AND JUNIOR SCIENCE
INNOVATIVE IN-SERVICE PROJECTS
BOARD REPORTS, 1988-89
YEAR II

PROJETS PILOTES DE FORMATION
EN COURS D'EMPLOI SUR LES SCIENCES
AUX CYCLES PRIMAIRE ET MOYEN
RAPPORTS DES
CONSEILS SCOLAIRES, 1988-1989
2e ANNÉE

CENTRAL ONTARIO REGION

CENTRE DE L'ONTARIO

BRANT COUNTY BOARD OF EDUCATION

TITLE

Science Is Happening Here

FOCUS OF PROJECT

To give teachers some strategies and activities to make the teaching of science a more child centred and a more hands on approach

TARGET GROUP

Science Key Teachers in each school (Primary 35, Junior 37)

SPECIAL FEATURES

The role of the science key teachers was and continues to be to heighten awareness, to improve the comfort level and to be the catalyst for science to happen within the school.

BOARD CONTACT

Doug McLeish, Coordinator
Junior Division
Brant County Board of Education
349 Erie Avenue
Brantford, Ontario
N3T 5V3
(519) 756-6301

PROGRAM SUMMARY

The in-service sessions emphasized an integral child-centred and balanced program in science. The workshop leaders provided both male and female role models and demonstrated the application of science in the real world of the child.

The following were the objectives for the second year:

1. to have teachers involved in hands-on problem-solving activities so that they can develop similar activities for their own classrooms
2. to make teachers more comfortable with education outdoors by involving them in outdoor science activities which could be use with their own students on their own schoolgrounds
3. to make teachers aware of new resources for science

BRANT COUNTY ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary/Junior Division Science Project

FOCUS OF PROJECT

Improvement in Science Education

TARGET GROUP

One "Lighthouse" classroom in each of 10 elementary schools

SPECIAL FEATURES

Variety of in-service sessions on Science Education

BOARD CONTACT

Mike Demers, Superintendent of Education/Program
Brant County Roman Catholic Separate School Board
322 Fairview Drive
Brantford, Ontario
N3T 5M8
(519) 756-6369

PROGRAM SUMMARY

The second year of this project focused on:

a) a day of "Lighthouse"/class teacher-sharing about their curriculum projects to date

b) a per-class visit from the R.O.M. Fossils program to encourage coaching and modelling

c) a half-day TVO *Science Is Happening Here* workshop for all "Lighthouse" classroom teachers

d) a system-wide Dairy Conference for all Junior division pupils emphasizing first-hand data collection and hands-on learning

e) participation in the M.O.E. Celebrating Science Conference March 1-3, 1989 (4 participants)

DUFFERIN-PEEL ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary/Junior Science Innovative In-Service

FOCUS OF PROJECT

Priority Developmental-Human Resources for:
1) Gender Sensitive Issues in Science
2) Science Kit Committee and Science Olympics Sub Committee

TARGET GROUP

1) 10 members - Gender Sensitive Issues in Science Committee
2) 11 members - Science Kit Committee

SPECIAL FEATURES

Training Trainers Model

BOARD CONTACT

Kathleen Eatherley
Dufferin-Peel Roman Catholic Separate School Board
40 Matheson Boulevard West
Mississauga, Ontario
L5R 1C5
890-1221

PROGRAM SUMMARY

1) Gender Sensitive Issues in Science Committee - October '88/May '89

- Members held meetings to develop "training trainers" model for Family of Schools
- Met to refine in-service sessions - October/December '88
- Access to speaker and conferences to reduce science anxiety: STAO Project Wild
- Presentations for P/J Science Gender Sensitive Issues
  - January 10 - to York P/J Science - 25 teachers
  - February 3 - to Consultants' Sharing Committee - 20 consultants
  - February 6 - to York Computer Science - 15 teachers
  - February 10 - to P.A. Day - 20 teachers
  - May 8 - to Curriculum Management Family Delegates for Focus on Science - 25 administrators

2) P/J Science Kit Committee

- in-service Science Olympics
- February 10 - P.A. Day - 50 teachers
- pilot of Series III Ontario Science Kit
- explanation of Kit Development in other Boards
- feedback on Kit Development in this Board
- presentations for P/J Science Kits
  - February 10 to P.A. Day - 40 teachers
  - April 26 to Curriculum Management Family Delegates for Focus on Science - 25 administrators

DUFFERIN-PEEL, CONSEIL DES ÉCOLES SÉPARÉES CATHOLIQUES ROMAINES DE

TITRE

Projet de formation en sciences

OBJECTIFS DU PROJET

Impliquer des enseignantes des cycles primaire et moyen dans un projet de formation, d'élaboration et de mise en oeuvre afin d'apporter des stratégies d'expérimentation et de manipulation axées sur les besoins de l'enfant pour le cours des sciences.

GROUPE-CIBLE

Pour cette année, le groupe-cible était constitué de trois enseignantes qui, avec le temps, devraient devenir des personnes-ressources. A plus long terme, ces enseignantes en collaboration avec les conseillers pédagogiques, auront peut-être un impact sur 24 enseignants.

Malheureusement, le plan à long terme ne se réalisera pas comme prévu. Des trois enseignantes, une passe à un autre Conseil, une autre a pris un congé de maternité et la troisième sera conseillère pédagogique. La mobilité des enseignants dans notre Conseil rend difficile des projets à long terme. Cependant, deux enseignantes ont participé à un projet d'élaboration. Il est espéré qu'avec cette expérience, elles seront des agents multiplicateurs dans leur école.

CARACTÉRISTIQUES

Les enseignantes et le conseiller se sont rencontrés pour planifier les étapes du projet, puis le tout s'est réalisé. Par le travail d'équipe, les enseignantes se sont senties soutenues et appuyées dans leur effort. Elles ont été directement impliquées dans la prise de décisions qui affectait leur développement professionnel et le déroulement du projet. L'impact de ce projet est durable.

LIAISON

Renaud Courchesne, surintendant des écoles de langue française
Conseil des écoles séparées catholiques romaines de Dufferin et Peel
40, boul. Matheson ouest
Mississauga, Ontario
L5R 1C5
(416) 890-1221

RÉSUMÉ DU PROGRAMME

Etant donné les circonstances, le projet ne s'est pas réalisé comme prévu. L'étape de formation s'est bien déroulée. Les enseignantes ont participé à des conférences, à des ateliers, et à des discussions sur l'énoncé de politique et, en particulier, sur les stratégies d'enseignement.

Pour la deuxième étape, celle de la création d'une unité d'études, une seule a été élaborée. En même temps que se déroulait ce projet de formation, un autre projet allait être mis sur pied dans notre région, "L'élaboration d'un programme d'études interconseil". Celui-ci allait nous affecter positivement. Nous avons décidé de combiner notre étape d'élaboration d'une unité avec ce projet interconseil puisqu'il y avait là le même but.

Deux des enseignantes du projet de formation ont participé au projet interconseil d'élaboration d'un programme d'études. Cette expérience a définitivement eu plus d'impact que si on avait simplement poursuivi le projet de formation, en particulier comme perfectionnement professionnel. Ces enseignantes deviennent donc pour l'an prochain des personnes-clés pour assister à la mise en oeuvre du programme d'études et non seulement d'une unité comme le prévoyait le projet de formation.

Quant à la troisième étape, celle du partage, elle se fera au niveau de la province par la publication du document au Centre franco-ontarien et selon notre plan de mise en oeuvre prévu à l'intérieur de notre Conseil.

En conclusion, nous pouvons affirmer que le projet de formation a commencé comme prévu mais des circonstances incontrôlables et une opportunité de projet interconseil ont modifié le cheminement. Cependant, ces changements nous paraissent plus bénéfiques que les retombées du plan initial.

ETOBICOKE, BOARD OF EDUCATION FOR THE CITY OF

TITLE

The Junior Division Language/Science Initiative

FOCUS OF PROJECT

Integration of language and science in the Junior Division

TARGET GROUP

every child in the Junior Division
every principal in a Junior Division school
every teacher in the Junior Division

Introductory Workshop	
number of principals	48
number of teachers	53
Round One Workshops	
series of 3 workshops	
number of teachers	28
Training Workshops for selected Round One Teachers	
number of teachers	7
Round Two Workshops	
series of 2 workshops	
number of teachers	17

NOTE: Each workshop was a full-day workshop

SPECIAL FEATURES

- Cooperative planning utilizing science, language, primary/junior, and special education personnel
- Utilization of additional board resource personnel with specific expertise in areas, such as computers, evaluation, outdoor education, technology
- Training selected teachers from Round One to continue the initiative

BOARD CONTACT

David Gregory
Board of Education for the City of Etobicoke
Civic Centre Court
Etobicoke, Ontario
M9C 2B3
394-6806

PROGRAM SUMMARY

The introductory workshop had a special keynote speaker (Rod Peturson from Windsor) and also dealt with the Metro produced video on Language in Science.

The Round Two workshops extracted highlights from Round One and looked more specifically at the Etobicoke Science Kit program with the theme of integrating language and science.

HALDIMAND-NORFOLK ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Science Education Resource Teacher (S.E.R.T.)

FOCUS OF PROJECT

"Science Is Happening Here" in the Junior grades

TARGET GROUP

1,224 Primary students
62 Primary/Junior teachers

SPECIAL FEATURES

Primary Science Resource Teacher: to serve as a model teacher and to assist with the implementation of the science program within the classrooms.

BOARD CONTACT

Dennis Shewburg, Superintendent of Schools
Haldimand-Norfolk Roman Catholic Separate School Board
Box 278
Simcoe, Ontario
N3Y 4L1
(519) 426-8370

PROGRAM SUMMARY

1. Promotion of acceptance of the science program within our Board.
2. Attendance at conferences and workshops to help the system keep up to date with current philosophies and practices relevant to the Primary Environmental Studies curriculum.
3. Presentation to parents outlining the current philosophies and practices directed by the Ministry of Education issued in the document *Science Is Happening Here.*
4. Informing teachers of the current philosophies and document *Science Is Happening Here.*
5. Assistance in development of school programs through primary staff meetings.
6. Worked on the Environmental Studies writing team.
7. Worked with the environmental studies writing team to present the curriculum document to the primary teachers for implementation.
8. Demonstration lessons provided for teachers, thereby giving assistance in teaching strategies and techniques.
9. Teachers provided with resources for use within their classroom
10. Pupils assisted in developing competency in the science component of our environmental studies document
11. Planning, preparation and establishment of science kits and resources for loan service within the Board.

During this year as SERT, I have visited every Primary classroom and several Junior level classrooms. A schedule of school visits was set up and within each school, one staff member acted as my contact for scheduling activities.

Within the course of this year, I have worked to develop the skills and process of scientific inquiry as directed by *Science Is Happening Here*. The skills were developed using the following topics:

Animals Prepare for Winter
Pets
Apples
Signs of the Seasons
Birds
Senses
Snow
Seasonal Rotation of the Sun
Wild Animals
Adaptation to the Environment
Sound
Insects
Solar System
Outdoor Education
Weather
Sand

HALTON BOARD OF EDUCATION

TITLE

Science Integration Project

FOCUS OF PROJECT

Developing teacher skills related to planning and implementing integrated science units

TARGET GROUP

6 schools and 24 teachers

SPECIAL FEATURES

An intensive on-site in-service with school teams with administrative involvement

BOARD CONTACT

John Pettit
Halton Board of Education
2050 Guelph Line
P.O. Box 5005
Burlington, Ontario
L7R 3Z2
335-3663

PROGRAM SUMMARY

This project was a continuation of the initiatives begun in the fall of 1987. An additional 12 schools were involved for a total of approximately 50 teachers. The focus continued to be on developing teacher instructional skills related to the planning and implementing of integrated science units. Examples of integrated themes included the following: colour and light, mud, recycling, sound, magnets, popcorn and simple machines.

HAMILTON-WENTWORTH ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary/Junior Science Innovative In-Service Project

FOCUS OF PROJECT

In-Service for Primary/Junior Teachers Re: Active Learning In Science

TARGET GROUP

600 Primary and Junior Teachers

SPECIAL FEATURES

Coaching - in-service for implementation team
Large Group Presentations

BOARD CONTACT

Al Bernacki
Hamilton-Wentworth Roman Catholic Separate School Board
90 Mulberry Street
Hamilton, Ontario
L8V 4B5
525-2930 ext. 159

PROGRAM SUMMARY

An intensive one-and-a-half day in-service was planned for the 12 member implementation team in September of 1988. This implementation team then in-serviced small groups of teachers from families of schools. It was ensured that the majority of the team were female in order to highlight the role of women in science. This took place on October 28, 1988. A number of the implementation team members are presently piloting the Science Centre Kits and these teachers will be available in the fall to continue the coaching of small groups of teachers in the use of these hands on resources for the teaching of science.

Six members of our implementation team represented our Board at the Celebrating Science Conference in March. Two other members of the team were involved as presenters.

HASTINGS COUNTY BOARD OF EDUCATION

TITLE

Primary/Junior Science Teacher's In-Service

FOCUS OF PROJECT

Implementing the expectations in *Science Is Happening Here*

TARGET GROUP

20 key teachers in 13 elementary schools

SPECIAL FEATURES

Coaching in curriculum development instruction at the school and classroom level, training and curriculum review and development at the system level.

BOARD CONTACT

George Janota
Hastings County Board of Education
156 Ann Street
Belleville, Ontario
K8N 1N9
(613) 966-1170 ext. 286

PROGRAM SUMMARY

Key teachers attended nine full-day in-service sessions from October 1988 to May 1989. The purpose of these sessions was to:

- develop a positive attitude towards science
- establish a knowledge of selected concepts
- develop curricula which promote integrated child-centred learning
- develop coaching skills to assist the principal and other teachers in their home school with the implementation of the expectations in *Science Is Happening Here.*

The training sessions addressed these outcomes and each workshop incorporated a combination of theory, demonstration, practice and feedback. Presenters included system teachers and consultants, federation personnel, private consultants, as well as consultants from other Boards of Education.

At the school level key teachers and teachers were provided with release time to address the outcomes in *Science Is Happening Here.* The most common activities included the planning and development of integrated units with a science theme, planning school-wide science days, observing other classrooms, establishing science resource rooms and kits, evaluation of the in-service program.

LINCOLN COUNTY BOARD OF EDUCATION

TITLE

Science Innovative Implementation In-Service Project

FOCUS OF PROJECT

- to provide teachers with increased knowledge of scientific principles which will enable them to be more effective teachers of science
- to provide teachers with knowledge and experience in designing, implementing and evaluating science based activity centres and units of work
- to provide leadership opportunities for teachers to in-service and coach other teachers using the science materials developed
- to enable teachers to apply the inquiry approach in the teaching/learning of scientific concepts as outlined in *Shared Discovery* and *The Formative Years*
- to provide experiences in science that will encourage children to develop the skills, knowledge, and attitudes they need to meet the challenges of the future. These skills are also life skills and will help children strengthen and deepen their reasoning abilities
- to provide in-service sessions for all our principals using small group "hands-on" participation as well as large group presentation
- to provide in-service for our librarians to enable them to become part of the *Science Is Happening Here* In-Service Initiative

TARGET GROUP

6 teachers on my committee
22 Primary Resource Teachers
25 Teachers designated by their schools

SPECIAL FEATURES

A. The committee of 6 teachers conducted the in-service sessions for the 22 Primary Resource teachers. These sessions included small group discussions and hands-on activities and a chance for teachers to become familiar with the knowledge, materials and equipment they were to share with their peers. The committee also presented Grade Level meetings on the S.E.S. units for the teachers involved in implementing them.

B. One teacher worked half-time directly with the Primary Resource Teachers and some of the teachers in their schools. Using hands-on materials and working directly with the children, he taught a science lesson for them. Usually there were two or three visits to each classroom.

C. Primary Resource teachers worked directly with the Primary teachers in their own schools, with extra help from the half-time Science Resource person and a Primary consultant who worked on a one-to-one basis with them on request.

BOARD CONTACT

Betty Adams
Lincoln County Board of Education
Education Centre
112 Oakdale Avenue
St. Catharines, Ontario
L2P 3J9
(416) 685-1551

PROGRAM SUMMARY

We found the Primary Resource Teachers group in-service sessions very valuable in building a "collegial" feeling for Science within this group. The small group discussions with a committee member for each group gave the teachers time to share their successes and also to find help with their problems in a non-threatening atmosphere. The results of the Pre/Post test showed growth in knowledge and understanding of the Ministry Documents and much greater use of them by the teachers. The teaching comfort level was raised in each category showing that our teachers are providing programs that will help children become self-directed, self-motivated problem solvers.

The Evaluation of the Science Implementation Process showed that for the Primary Resource Teachers:
- the time allotted was adequate
- the facilities were adequate
- the format was effective

The sequence of content was effective and the time spent on each section was fine except for the planning. Teachers felt they needed more time to work on a unit plan of their own which would include the attitudes, skills, knowledge and the activities needed to carry it out.

At the Grade Level sessions our survey showed that:
- the time (after school) was adequate
- the location (in a teacher's classroom) was excellent
- the format (lots of hands-on activities and suggestions on how to do each unit) was excellent as well.

The hand-outs, concrete materials and our sets of pictures were much appreciated.

The half-time science resource person visited the teachers on request and so was welcomed into each classroom. This method of implementation was effective, consistent with the philosophy in our S.E.S. units and very helpful to the teachers.

The second group of teachers, those designated by their schools, has begun the in-service sessions. We find we will have to move more slowly with this group and give them extra support help. For this purpose a full time teacher has been appointed for next year. We also hope to be able to continue working with the Primary Resource Teachers group. Now that they have a basic understanding of how the S.E.S. units work we want to encourage integration of activity based learning into all of their daily programs.

A Science materials needs survey was carried out in May of this year. Some money is being made available to schools in need of materials and equipment. A three-year plan has been established which will include all elementary schools in our County. It is beginning this fall. Orders have been put out for tender.

This April the Primary Resource Teachers were presented with an "Evaluation" Package that was prepared by a subcommittee of 1 committee member and 2 teachers involved in the Science implementation. It is based on using some activities within each of the S.E.S. units to observe the process and possibly a product for evaluation purposes. Next year further in-service on this package will be needed with hands-on experiences to help teachers use it effectively.

METROPOLITAN SEPARATE SCHOOL BOARD

TITLE

Activity-based learning in the Primary/Junior Division

FOCUS OF PROJECT

To in-service teachers in the teaching and learning of Science in an integrated, child-centred, balanced curriculum using print, non-print, visual, audio-visual and manipulative materials in the classroom. The project involved both English and French schools in the system.

TARGET GROUP

Teachers in the primary/junior division (approximately 2,000)

SPECIAL FEATURES

- Several lead teachers in the Field Centres were identified with a view to coaching colleagues in the field.
- Use of new science kits and their application to the science curriculum was emphasized.
- Women presenters were particularly encouraged to take part in the sessions.

BOARD CONTACT

Dr. Des Pearce, Vice Principal on Special Assignment, Science
Metropolitan Separate School Board
80 Sheppard Avenue East
Willowdale, Ontario
M2N 6E8
222-8282

PROGRAM SUMMARY

Activity-Based Learning was the broad theme for the Primary and Junior divisions of the school board. Science was targeted as a "special" area of concentration in order to renew the interest and knowledge of teachers in science education. To this end, primary and junior teachers from all field centres across the Board were involved in several organized:

- school board workshops
- presentations (oral and hands-on) using Board-developed science kits, printed curricula and Ministry-developed science kits
- workshops from organizations such as Ontario Science Centre, SEEDS, P.J. Spratt and Publishing companies
- TV Ontario programs
- visits to schools and industry
- conferences, e.g. STAO, Celebrating Science, Ontario Association of Junior Educators

Distinguished speakers and presenters were invited to actively participate in the events:

Rosalie Parente	Resource Teacher, MSSB
Larry Swartz	Consultant, Dufferin Peel Board of Education
Sarah Hoover	Consultant, SEEDS
Nancy Gahm	R.O.M.
Derek Quinn	Computers Department MSSB
Godwin Darmanin	Principal, St. Lucy School (Demonstration School)
Allan Foster	Kortright Centre
John Fowles	Ontario Science Centre
David Bruer	Pollution Probe
Frank Flanagan	Principal, St. John Vianney - author of Elementary Science texts
Barbara Worth	Vice Principal, Science Fair Coordinator MSSB

These are just a few of the people involved in the program delivery.

The program was designed to occur over the school year commencing in October, 1988. The Field Centres divided up into Etobicoke/York, North York, Toronto and Scarborough East York respectively were each involved by superintendency. This allowed the program to be delivered to smaller groups of teachers, thereby facilitating greater interaction and networking among teachers.

The dates on which intensive in-service occurred by field centre are as follows:

Scarborough East York:	October 17, November 14, 15, 16, 1988
Toronto:	October 17, 18, 19, 20, 1988
North York:	November 14, 1988 and January 13, 1989
Etobicoke/York:	October 24, 28, November 15,/88 & January 27, 1989

The number of teachers involved on each of these dates varied from 20 to 50 depending on the size of the superintendency.

In addition to the intensive programs delivered on these dates, special visitations by exemplary and Resource teachers were made to classrooms as a follow-up to the program. This was designed to provide a back-up and continuum to the intensive sessions held earlier.

NORFOLK BOARD OF EDUCATION

TITLE

Pilot-Project to develop professional growth in science.

FOCUS OF PROJECT

Professional development of primary, junior and special education teachers, as well as administration.

TARGET GROUP

Primary and Junior Teachers and Special Education teachers and Administration (300)

SPECIAL FEATURES

Coaching with all administration, key teachers and in select schools. 2 system-wide professional activity days with a focus on science. Series of after school workshops. Leadership development through writing teams and in-service presentations.

BOARD CONTACT

J. G. Townsend
Norfolk Board of Education
Box 486
Simcoe, Ontario
N3Y 4L7
(519) 428-1880

PROGRAM SUMMARY

Coaching: **Target Group of Key Teachers and Schools**

In partnership with OISE, under the leadership of Dr. W. Seller, all administrators and key teachers (1 per division from each school) participated in full-day sessions to develop the skills of peer coaching. A follow-up full-day session with selected schools was held to refine and extend the coaching process. In addition, teachers in these selected schools were provided with two days of release time to refine the model (i.e. observe in one another's classroom, identify and plan objectives, develop strategies for school-wide implementation).

System-Wide Focus: **All Primary, Junior, Special Education Teachers and School and Board Administration**

On 2 system-wide PA days that focused on science, outstanding speakers from across the province (i.e. Rod Peturson, Rosalie Parente, TV Ontario) provided impetus for activity-based Science learning opportunities in Norfolk.

As well, exemplary Board teachers developed hands-on, child-centred units and resource kits for the primary and junior levels. These units were presented by these curriculum writers in workshops held on PA days and after schools. This opportunity allowed these teachers to develop skills in curriculum development and to refine their leadership skills as workshop facilitators, and to serve as role models for their colleagues.

Some of these units and resource kits included:

- Bugs and Critters (K-3)
- Sound (K-3)
- Space (2-3)
- Paper (K-3)
- Lenses & Microscopes (Gr. 4)
- Agriculture (Gr. 5)
- Simple Machines (Gr. 6)
- Light and Colour (Gr. 4)
- Science Detective (Gr. 5)
- Weather (Gr. 6)

NORTHUMBERLAND & NEWCASTLE BOARD OF EDUCATION

TITLE

Electricity: An Integrated Unit for Grade 6

FOCUS OF PROJECT

To provide teachers with the strategies, materials, and in-service necessary for teaching an integrated, child-centred experimental and balanced science unit, electricity.

TARGET GROUP

Grade 6 principals (45), teachers (57), and pupils (1700)

SPECIAL FEATURES

- kits contained all print, audio visual and manipulative materials for an integrated centre approach to electricity
- coaching
- produced in French and English

BOARD CONTACT

Grant Yeo
Superintendent of Instruction (Program)
Northumberland & Newcastle Board of Education
P.O. Box 470
Cobourg, Ontario
K9A 4L2
(416) 372-6871

PROGRAM SUMMARY

September 1987
- Formation of Planning and Writing Team-needs assessment-writing overview and equipping kits

January 1988
- in-service for field-testers

January - May 1988
- field-testing kits

May 1988
- evaluation of materials by field testers

June 1988
- modification to kit-development of implementation plan

September 1988
- in-service for superintendent, principals, and resource staff

October/November 1988
- teachers introductory workshop by ASG or area

December - May 1988/89
- ongoing implementation assistance and support
- teachers use and evaluate unit
- principals provide support in schools
- ASG coaches and resource support staff respond to requests and conduct area meetings

PEEL BOARD OF EDUCATION

TITLE

Primary/Junior Science Network

FOCUS OF PROJECT

In-Service support for implementation of an active learning science program based on *Science Is Happening Here*

TARGET GROUP

120 Primary/Junior Teachers and their Principals

SPECIAL FEATURES

Peer Coaching, Professional Dialogue

BOARD CONTACT

Allan Smith, Co-ordinator of Science
Peel Board of Education
5650 Hurontario Street
Mississauga, Ontario
L5R 1C6
890-1099

PROGRAM SUMMARY

Forty "host" teachers (20 primary, 20 junior) from 40 schools were identified by their principals on the basis of teaching practices, working relationships with peers, potential for leadership and capacity for growth. Together with their principals and in the company of 30 resource teachers, these host teachers received one and a half days of hands-on in-service (in released time with supply teacher coverage). The workshops focused on:

- indicators of active learning;
- development of an active learning experience from *Science Is Happening Here* (teacher and principal worked together to set objectives, plan the activity, evaluate it);
- peer coaching training.

Following this training, each teacher worked with a resource teacher in a peer partnership to develop active learning experiences for his/her class.

Meanwhile, 120 "visiting teachers" had been identified in other schools. Three of these teachers visited each host teacher for a half day (in released time with coverage) to observe active learning of science. For part of these visits, each host teacher was given coverage so that he/she and the visitors could withdraw for professional dialogue about the planning and evaluation of the observed activities. IN many cases, these teachers arranged subsequent exchanges of this sort in their own time.

Our assessment of this project indicates that teachers value highly the opportunity to meet and share experiences. Host teachers gained skills and a comfort level that will enable them to function as peer partners and coaches in the implementation of science programs in their schools. Based on this, we plan to continue the network in 1989-90, drawing a new cohort of host teachers from this year's visitors.

In addition to the network, implementation of *Science Is Happening Here* was also supported in 1988-89 by:

- a series of voluntary workshops in October, 1988 (4:00 to 8:00 p.m. with dinner provided) which stressed hands-on experience with learning activities for primary and junior science programs. These are outlined on the enclosed flyers. These workshops were well attended and similar ones will be offered in 1989-90.
- "Sciencing", a professional development conference held in February, 1989, had a major primary/junior component.

PETERBOROUGH COUNTY BOARD OF EDUCATION

TITLE

Summer Science Program for Junior Division Teachers (August 22-26, 1988)

FOCUS OF PROJECT

To give junior division teachers hands-on experience with manipulative materials, opportunities to put active learning into practice and to promote balanced integrated child-centred science programs.

TARGET GROUP

Junior Division teachers, (including French Immersion, Special Education teachers), Principals and Vice Principals, and In-school Resource

SPECIAL FEATURES

The program was an intensive 5-day program, beginning at 8:30 a.m. until 12:00 a.m. each day. A full day's bus trip to the Ontario Science Centre occurred mid-week.

BOARD CONTACT

Stephanie MacDonald, Junior Division Consultant
Peterborough County Board of Education
150 O'Carroll Avenue
Peterborough, Ontario
K9J 7A1
(705) 743-7431

PROGRAM SUMMARY

The program focused on a specific topic(s) each day. Topics included:

- forensic science
- trackball
- animals in the classroom
- TV Ontario and science
- manipulative materials
- Ontario Science Centre
- Project Wild
- evaluating science programs

Guest speakers and experts in the various topics involved participants in hands-on activities. Teachers had opportunities to be very actively involved, to ask questions and to engage in time for discussion and reflections.

Displays of manipulative materials, science related library resource materials and a special exhibit of rocks and minerals were available for viewing and exploration throughout the week.

At the end of each day teachers had the opportunity to be the lucky winner of a door prize or the winner of a special quiz based on estimation, prediction, etc. Prizes were really neat science manipulative materials!

Feedback from the participants was extremely positive. They enjoyed the practical strategies and ideas and the numerous materials that the various presenters gave out. As a special thank-you for their participation in the summer school program, teachers were given a small kit of various manipulative materials.

Participants left this program very enthusiastic and anxious to get going on their science programs in September.

SIMCOE COUNTY BOARD OF EDUCATION

TITLE

Growing Through Science (GTS) Project

FOCUS OF PROJECT

SIHH Implementation/Staff Development

TARGET GROUP

Six Elementary Schools - One per Administrative Area (50 teachers)

SPECIAL FEATURES

1. Use of Concerns Based Adoption Model (CBAM) as main implementation strategy.

2. Development of a core group of teachers capable of providing leadership for workshops and coaching colleagues.

BOARD CONTACT

C.H. Shanks
Simcoe County Board of Education
99 Ferris Lane
Barrie, Ontario
L4M 2Y2
(705) 728-7570

PROGRAM SUMMARY

Volunteer schools were selected based on a representative sample according to size and urban/rural location. All project participants attended a summer institute in August 1988. To focus on the SIHH document and the use of locally developed science kits.

Emphasis was based on team planning, the role of science in an integrated child-centred program and on-going in-service. Each school was supported by a consultant who made weekly visits to support the planning process and respond to individual and group concerns. All project schools met regularly to participate in and provide leadership for workshops based on common interests. Each participant was provided with up to seven release days for planning and in-service.

The Research Department assisted in the evaluation of the project mainly through feedback to participating teachers and program staff. Teachers completed pre and post questionnaires including one that examined their stages of concern about the project. Students completed attitude surveys related to science in general and science in school. Diaries were kept by participating teachers and consultants.

Each GTS school has developed an in-service program which will be offered to other schools during 1989-90.

SIMCOE COUNTY ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary/Junior Science In-Service

FOCUS OF PROJECT

To provide a wide variety of available resource and strategies that the classroom teachers could readily use in their programme planning with emphasis on the activity based, child-centred approach to learning.

TARGET GROUP

Primary/Junior teachers (approximately 250) through thirty-eight key teachers.

SPECIAL FEATURES

One or two key teachers from each school were directly in-serviced. They communicated the information to their respective staffs during curriculum planned meetings.

BOARD CONTACT

Mr. D.G. Carroll
Superintendent of Schools - Programme
Simcoe County Roman Catholic Separate School Board
46 Alliance Boulevard
Barrie, Ontario
L4M 5K3
(705) 722-3555

PROGRAM SUMMARY

Five half-day in-service sessions were provided for thirty-eight key teachers (twenty-seven English elementary schools) in the fall of 1988. The topics covered were:

1) overview of policy statement *Science Is Happening Here*
2) introduction of Science Kit programme
3) TV Ontario presentation
4) child-centred programming
5) presentation of Georgian Bay National parks programme
6) presentation of Simcoe County Agricultural programme
7) presentation on Board's Computer Science base programmes
8) presentation on list of Science based facilities and speakers available in Simcoe County.

Time was built in for sharing, examination of Science kits and evaluation throughout the Fall sessions.

One and a half in-service sessions were provided for forty-six key teachers (French and English elementary). The topics covered were:

1) Outdoor education - Project Wild, Camp Castex, scientific method, presentation on furs - animals local to our environment
2) Recap of resources available
3) Science programme sharing session and evaluation
4) Some correlation with *Growing With Books* resource document

At the County level, Science was encouraged to be pursued during professional development days as well as during after-school sessions. Such programmes as the Milk Marketing Board, Society of Energy and Environment Development Studies Foundation (S.E.E.D.S.), Energy Educators of Ontario was given. The perception of the student as a problem-solver who is actively involved in pursuing his/her own learning was emphasized during each session.

TORONTO, BOARD OF EDUCATION FOR THE CITY OF

TITLE

Integrating Science and Language Arts

FOCUS OF PROJECT

Through concrete examples by classroom teachers show how language can be developed through science

TARGET GROUP

Elementary teachers (130)

SPECIAL FEATURES

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BOARD CONTACT

Bill Graham, Science Coordinator
Board of Education for the City of Toronto
155 College Street
Toronto, Ontario
M5T 1P6
591-8256

PROGRAM SUMMARY

This one-day conference featured concurrent sessions by 9 teachers that allowed Toronto teachers to get very specific examples of how to carry out ideas they could use in their own classrooms immediately.

VICTORIA COUNTY BOARD OF EDUCATION

TITLE

Science Innovative In-service Project

FOCUS OF PROJECT

Promotion of effective integrated, child-centred, balanced science programming throughout the formative years

TARGET GROUP

19 principals, 19 librarians, 149 primary teachers, 110 junior teachers

SPECIAL FEATURES

Peer Coaching/Partnering: 5 primary partnerships and 5 junior partnerships established initially

BOARD CONTACT

W.C. Capeling, Curriculum Co-ordinator
Victoria County Board of Education
Box 420
Lindsay, Ontario
K9V 4S3
(705) 324-6776

PROGRAM SUMMARY

1. **Highlighting Science**
   The project commenced with a full professional development day devoted exclusively to the promotion of *Science Is Happening Here*. The keynote address and workshops featured the following: integrated, child-centred, balanced, hands-on programming; more meaningful, active involvement of girls in science classes; extensive involvement of female workshop leaders.

2. **Peer Coaching/Partnering**
   Prospective coaches and partners were identified using criteria based on the literature. Coaches and their principals were in-serviced by Wayne Seller, OISE Northwestern Centre. Eight of the ten partnerships were successful. Plans were underway to expand the number of partnerships in 1989-90. The number of schools involved will more than double.

3. **Special Staff Development**
   Peer partners and other interested staff in all schools were provided with additional in-service assistance throughout the year on the following topics: child-centred programming, Active Learning, Promoting interest and involvement of girls in science, Female Role Models/Women Inventors workshop.

4. **Leadership Opportunities for Women**
   Besides the involvement of a high percentage of women as workshop leaders and coaches, a very significant number of women teachers attended science conferences. A list of area women with successful science-related careers is being developed and will be sent to schools to be included in the Inventory of Ontario Women in Science.

WATERLOO COUNTY BOARD OF EDUCATION

TITLE

Science Innovative In-Service Project

FOCUS OF PROJECT

To develop and refine the teaching skills of a select group of teachers in the science component of the board's Environmental Studies program (K-6).

TARGET GROUP

Eighteen teachers, both male and female, English and French Immersion, from schools from a variety of geographical areas within the board, and spanning the grades K to 6.

SPECIAL FEATURES

Participants were encouraged to develop skills which would allow them to become part of a leadership pool available to share their learning with others through future professional development and in-service programs. Project leaders used coaching techniques during the project. Videotapes were made of exemplary lessons by the participants for use in implementation workshops and by individual teachers and staff. The larger number of participants (compared to the first year of the project) was made possible in part by the assistance provided by participants from Year I of the project.

BOARD CONTACTS

Doug Koegler, Jill Snider
Environmental Studies Department
Waterloo County Board of Education
51 Ardelt Avenue, Box 68
Kitchener, Ontario
N2G 3X5
(519) 742-1751

PROGRAM SUMMARY

June 1987:
Invitation of K-6 teachers to apply for participation in the project.

September:
Information meeting of applicants to outline the project objectives, selection criteria and timelines. Project leaders (4 consultants of the Environmental Studies department). Select 18 participants. Evening workshop to introduce the document *Science Is Happening Here.*

October - November:
Three half-day workshops in which presentations were made on ideas and suggestions for active learning from physical, life, and earth-space sciences. Leadership in these workshops was provided in part by participants from the first year of the project. One after-school workshop on video techniques.

December - January:
Individual participants used one day of release time to plan a specific unit to be taught in February. This time was divided between work with a project leaders, and individual or group work with other participants developing similar or related units. In some instances, Year I participants provided assistance in these planning sessions. Participants were encouraged to enlist support and assistance from their teacher-librarians and principals.

February:
Each participant taught a prepared unit, with coaching assistance provided by a project leader. Some parts of lessons and activities were videotaped, and later edited to about 10 minutes in length. Each tape focused on a particular facet of the teaching unit - e.g. activity-centred learning, outdoor activities, methods of unit planning, evaluation techniques, etc.

March:
Evaluation sessions were held for each project leader's team of teachers, in which the February experience was reviewed, and modifications made for the next sessions.

March - May:
The pattern outlined for December to March was repeated. Each teacher selected and prepared to teaching in May a second unit with a strong science component from the existing Environmental Studies program. Again release time was provided for planning, both individual, and with project leaders, and sections of lessons were recorded on videotape during the teaching phase in May.

June:
1) One half-day evaluation session, including participants from Year I, to wrap up the project
2) Selected teachers provided with release time to generate short 'idea pamphlets' for inclusion within science kits now used by primary and junior teachers. These idea pamphlets will provide a form of in-service training for teachers not involved in the project, using the knowledge and skills acquired in the project by participants.

WATERLOO REGION ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Satellite Classroom Program

FOCUS OF PROJECT

Implementation of *Science Is Happening Here* policy

TARGET GROUP

Classroom teachers, principals, special education teachers, teacher-librarians (approx. 500)

SPECIAL FEATURES

Teachers were given opportunities to visit classrooms modelling implementation of the *Science Is Happening Here* policy and to dialogue with the classroom teacher regarding their Science program.

BOARD CONTACT

Tony Truscello, Superintendent of Education/Curriculum
Waterloo Region Roman Catholic Separate School Board
91 Moore Avenue
Kitchener, Ontario
N2H 3S4
(519) 578-3660

PROGRAM SUMMARY

1. Nine Primary and nine Junior teachers were identified and in-serviced in six half-day workshops addressing philosophy as outlined through *Science Is Happening Here* policy, development of concepts, skills and attitudes, use of outdoor environment, science equipment and materials, etc. As well, throughout the year, ongoing in-servicing opportunities were provided for the Satellite classroom teachers.

2. Descriptions for each of the Satellite classrooms along with application forms for visiting were distributed to all personnel as listed in the target audience in the project proposal.

3. Eighteen Satellite classrooms were opened for visitation form October 1988 to May 1989 inclusive. The half-day visit included classroom observation followed by dialogue with the Satellite teacher. Teachers were encouraged to visit Satellite classrooms as part of their own professional development in implementing *Science Is Happening Here*.

4. In addition to receiving visitors, the Satellite teachers were involved in offering system-level professional development activities throughout the year.

5. Based on the initial objectives of the innovative science project, there is indication that some gains have been made in the following areas:
   - Teachers were receptive to the child-centred, integrated Science programming as modelled in the Satellite classrooms.
   - Teachers found these opportunities for collaborative learning very beneficial.
   - Models of equity in Science programming were demonstrated.

While this project has been relatively successful, some modifications to the Satellite classroom program as outlined as well as a continued emphasis should result in its success as a viable strategy for implementing *Science Is Happening Here*.

WELLINGTON COUNTY ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Science For All

FOCUS OF PROJECT

The in-servicing of teachers and the consequential development of courses of study based on the principles of *Science Is Happening Here.*

TARGET GROUP

Three teachers for each grade level

SPECIAL FEATURES

Development of activity-based lessons, using the skills of science written by teachers in a manner that could easily be integrated into other subject areas.

BOARD CONTACT

Dan MacLellan, Supervisor of Science
Wellington County Roman Catholic
Separate School Board
P.O. Box 1298
75 Woolwich Street
Guelph, Ontario
N1H 6N6
(519) 821-4600

PROGRAM SUMMARY

This year's project is a continuation of the in-service and writing program initiated during the last school year. For each of six units, namely: Energy, Weather, Time/Space, Matter, Outdoor Education, and Life, three teachers for each grade level were gathered together. (The units of Matter, Time/Space, and Energy had been completed during the school year 1988-89.) This group of twenty-one teachers for each unit was presented with the philosophy, special features and objectives of the *Science Is Happening Here* document. Based on this in-servicing, the teachers, under the guidance of a consultant, generated, over a three day period, a series of lessons that contained these special features:

1) The lessons matched the specific objectives for that topic at that grade level from *Science Is Happening Here.*
2) The lessons were hands-on and emphasized student self-discovery.
3) The lessons highlighted the skills of science. (Each unit begins with a chart showing which skills are emphasized in each lesson.)
4) The lessons used materials that were common to the classroom whenever possible.
5) The lessons were written to a specific format that outlined general directions such as: whole group, small group and individual instruction, as well as follow-up activities.
6) The lessons used materials and activities that would easily allow teachers to integrate the program into Language Arts, Art, Music, and other subject areas.
7) A rotating kit system has also been developed in support of the units that include equipment, audio-visual materials, and resource books.

As a result of this program 126 grade K-6 teachers, principals, and Methods & Resource Personnel spent a total of 378 days under the guidance of four consultants, learning of the direction of *Science Is Happening Here* and having that learning reinforced by the writing of specific curriculum units. This curriculum consisting of forty-two units is now in its final stages of publication and will be presented to the teachers of the Board (specific to grade level) in September of 1989.

In addition, all teachers in the Primary and Junior divisions received a half-day workshop on *Science Is Happening Here* in October. This presentation introduced more specifically the changes in teaching methods and the learning environment that are expected by this science document.

WENTWORTH COUNTY BOARD OF EDUCATION

TITLE

In-Service To Promote Student-Centred Learning

FOCUS OF PROJECT

Inquiry model for science curriculum development

TARGET GROUP

Cluster group from ten schools to include: principal, teacher-librarian, 1 primary and 1 junior teacher

SPECIAL FEATURES

Integration across the curriculum

BOARD CONTACT

Wentworth County Board of Education
357 Wilson St. E.
Ancaster, Ontario
L9G 4B7

PROGRAM SUMMARY

In-service was a combination of theory and practice using the inquiry model. Basic thinking skills were investigated. In-service focused on integration across the curriculum. The coaching model was introduced and participants were encouraged to continue the in-servicing at their home schools.

EASTERN ONTARIO REGION

EST DE L'ONTARIO

CARLETON BOARD OF EDUCATION

TITLE

Science Is Happening Here - P/J Science In-Service Series 3 and 4

FOCUS OF PROJECT

1) To familiarize participants with the *Science Is Happening Here* document and provide support for the teaching of science in the elementary classroom (specific objectives attached).
2) Participate (6 teachers) in the Eastern Ontario P/J Science Lighthouse Workshop Series.

TARGET GROUP

60 Primary/Junior Teachers
6 students from the Faculty of Education - University of Ottawa

SPECIAL FEATURES

Teachers attend workshop series in teams of two per school. These teachers plus the school principal initiate plans for science renewal at school level. Self-selected participants receive peer coaching support.

BOARD CONTACT

Wayne Kerr
Carleton Board of Education
133 Greenbank Road
Nepean, Ontario
K2H 6L3
721-1820

PROGRAM SUMMARY

The P/J Science in-service package was comprised of a series of time-shared workshops presented between October 1988 and May 1989. Educational Services personnel, members of the Lighthouse Team and a few invited presenters shared in the instruction. Offsite visits to the Museum of Science & Technology and the Museum of Natural Science were used to create an "Idea Booklet" for hands-on science activities to be used by teachers on their return to school from a museum visit.

Throughout the series, the emphasis was placed on raising the comfort levels of Primary/Junior teachers in respect to the teaching of science. Hands-on participation and opportunities to share and network highlighted each session.

Six students from the Faculty of Education, University of Ottawa, participated in Series #3. These preservice teachers were given the opportunity to have Carleton Board of Education teachers who had participated in one of the P/J Science series as their practicum teachers.

P/J Science In-Service Series 3 & 4 Objectives:

a) To provide teachers with the science background knowledge, the skills required for effective science teaching and awareness of methodologies for implementing science in a well balanced integrated program.
b) To provide opportunities for staff members to assume future leadership roles in science implementation.
c) To create an awareness of science education research and its implications in elementary science instruction.
d) To create an awareness of the relationship between technology in science and the nature of science within the context of a primary/junior science program.

CARLETON ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Science In-Service Project

FOCUS OF PROJECT

Hands-on experience in conjunction with Ottawa Valley Field Trips

TARGET GROUP

33 schools - 1 class/school

SPECIAL FEATURES

- involvement of students and teachers
- cooperative endeavour with community agency
- parent awareness

BOARD CONTACT

Ann Heide
S.P.A.T. Environmental Studies
Carleton Roman Catholic Separate School Board
1695 Merivale Road
Nepean, Ontario
K2G 3R4
(613) 224-2222

PROGRAM SUMMARY

The Carleton Roman Catholic School Board chose to initiate a project with Ottawa Valley Field Trips, a local agency specializing in hands-on outdoor education programs. The capable staff members of Ottawa Valley Field Trips would model this approach for teachers in order to increase teacher comfort level with outdoor science experiences.

One class per elementary school was involved in a half-day or full-day program on one of the following topics:

Bushproofing and Survival
Making Friends with Plants
Getting to Know about the Local Mammals
Getting to Know about the Local Birds
Animal Tracking
Pond Study
Snow Study
Ecology
Pioneering

Teachers, students and parent volunteers were actively involved. Teachers were also expected to present a brief P.D. activity at the school level e.g. conduct classroom activities, share photos or slides, discuss the trip at a staff meeting.

The programs offered by Ottawa Valley Field Trips are consistent with the philosophy and child-centred approach of our new Primary and Junior Environmental Studies curriculum documents. The topics co-relate with those included in our programs and the integrated nature of the units is also consistent with our package.

In the past, it has been our experience that prepared and packaged units or kits are not used to the greatest advantage due to lack of experience in how to implement. Providing teachers with an experience on which to model will address this concern.

Due to the expense involved in transportation and instructors' payment, our schools are sometimes reluctant to take advantage of the in-service potential of Ottawa Valley Field Trips. This proposed project fills a joint need in terms of science renewal and curriculum implementation.

FRONTENAC COUNTY BOARD OF EDUCATION and FRONTENAC-LENNOX AND ADDINGTON ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

The Science Club

FOCUS OF PROJECT

To raise the comfort level of teachers with science and teaching science.

TARGET GROUP

20 Primary Division teachers
25 Junior Division teachers

BOARD CONTACTS

Mr. Horst Wohlgemut, Superintendent
Frontenac County Board of Education
220 Portsmouth Avenue
Kingston, Ontario K7L 4X4
(613) 544-6920

Mrs. Carol Weir, Superintendent
Frontenac-Lennox & Addington Roman
Catholic Separate School Board
84 Stephen St.
Kingston, Ontario K7L 0Y5
(613) 544-4927

SPECIAL FEATURES

First, teachers continued working with hands-on activities. As part of encouraging them to assume increased responsibility for their own personal and professional learning, they were invited to bring in new activities for members of the Science Club to try out and to share what they had learned in the Science Club with other teachers who were not involved in its activities. Second, much more extensively than in the first year, teachers' efforts to try out new hands-on activities were videotaped and shared with the other teachers in the Club. The project's title, "The Science Club", was proposed and enthusiastically adopted by participants, as a strong feeling of community emerged. This sense of community was and continues to be instrumental in raising teachers' comfort level and enabling them to openly discuss their successes as well as their failures, both in learning the science and trying it out with their pupils. As a result, action research came to have as its focus the teachers' own learning.

PROGRAM SUMMARY

During Year II, 8 3-hour sessions were held once again under the supervision of the two instructors, both of whom brought with them lengthy experience in the elementary classroom. In keeping with the aim of having the teachers assume greater responsibility for their own professional development, the participants themselves organized and conducted two all-day workshops for Club members in March 1989.

The emphasis on hands-on activities continued through the second year. As the year progressed, more and more teachers requested that the graduate student whose time was donated to the project by the Faculty of Education at Queen's University come to their classes to videotape lessons they were trying out. As a greater number of teachers began to try out new things, without being under any pressure to do so, a greater proportion of time in the meetings was taken up with talk about what did work, what didn't and why.

The evaluator continued to participate in and document all of the Club's activities. As part of the assessment of the second year the teachers were invited to write about some aspect of their experience in the Science Club. A detailed report has been written as part of the evaluation of the first two years of this project.

LANARK COUNTY BOARD OF EDUCATION

TITLE

Primary/Junior Science Lighthouse

FOCUS OF PROJECT

The production of 15 Science Kits to be used county wide.

TARGET GROUP

Primary/Junior staffs for 16 Elementary Schools.

SPECIAL FEATURES

We asked two teachers on early retirement incentives to duplicate the original five Science Kits. They facilitated the mobilization of kits.

BOARD CONTACT

Carol M. Campbell, Primary Co-ordinator
Jack D. Bradley, Junior Co-ordinator
Lanark County Board of Education
15 Victoria Street
Perth, Ontario
K7H 2H7
(613) 267-4210 ext. 255 or 253

PROGRAM SUMMARY

The concept of the Science Kits was so well received in the county that the principal group initiated and supported through monetary and human resources the generic reproductions of the kits. Each school will have 15 kits for use.

LEEDS & GRENVILLE COUNTY BOARD OF EDUCATION

TITLE

Innovative In-Service Incentive - Phase II

FOCUS OF PROJECT

- to extend the network of "lighthouse" schools for the system
- to expand the in-service plan to other schools in the Board
- to enhance the levels of knowledge, skills and comfort of teachers required to provide a child-centred and activity-based science program
- to encourage teachers to develop a science program based on the common experiences of children with everyday materials
- to assist teachers in developing a science program which is an integral part of the total school program
- to make female teachers more aware of the importance of their function as a role model in science for girls
- to involve all children in the full ranges of science activities, roles and experiences
- to provide opportunity for female teachers to take leadership roles in the development and implementation of the science program
- to provide opportunity for teachers to engage in collaborative and co-operative development of science program.

TARGET GROUP

- Complete primary and junior divisions
- Forty-one teachers representing fourteen schools
- Representative of all families of schools across Leeds and Grenville

SPECIAL FEATURES

- In-Service was predominantly school based.
- In-Service was on child-centred activity-based learning.
- Teachers were supported in applying new ideas to the development of program and in implementing the program with their students.
- In-Service was provided to school teams of teachers who form a support group, allowing teachers to develop professionally through co-operative interaction.
- In-Service generated a network of teachers who can provide leadership in future science in-service at the family of school level.
- Leadership opportunities were provided to female teachers at all phases.

BOARD CONTACT

Patricia Masson
Program Development Consultant
Leeds & Grenville County Board of Education
25 Central Avenue West
Brockville, Ontario
K6V 5X1
(613) 342-0371

PROGRAM SUMMARY

This program was an extension of Phase I which expanded the innovative in-service to other schools in the Board.

An initial in-service meeting occurred in June of 1988 at which Phase I participants shared their experiences and products with the teachers entering the program, and identified their role as resource teachers for those who were starting to use an activity-based science program.

Teachers were encouraged to become more aware of the "hidden curriculum", recognizing the importance of their own genuine interest in the subject as a role model and the need to consciously avoid sex-role stereotyping. The objectives of the project and expectations for the teachers joining Phase II were outlined.

Planning time was provided to allow the teachers to meet and develop ways if implementing the program. Because complete divisions in the schools were involved there was support for each other and the opportunity for coaching. Other support mechanisms were also available, i.e. consultants, resource teachers, resources and materials.

Throughout the year of P.A. days, three workshops for the pilot teachers were offered at which philosophy and child-centred learning were emphasized. "Science-in-a-sock" activities demonstrated that skills, attitudes and knowledge were attainable by actively involving the students. Further ideas and strategies needed to help implement the program were also provided by S.E.E.D.S. and Project Wild personnel.

Since the primary and junior division involved in Phase II constituted fewer teachers than anticipated, monies were used to release teachers to attend regional lighthouse meetings as part of their in-service. This afforded them the opportunity to see what other Boards were doing the help implement *Science Is Happening Here*. Two additional teachers involved in the project were also released to attend "Celebrating Science" in Toronto. Each school involved was also able to have a small incentive for purchasing resources and/or materials.

In June 1989 the Phase II teachers shared their accomplishments with the remainder of the schools. The invitation was extended to the Phase I participants. Teachers had the opportunity to visit fourteen centres, one representative of each of the pilot schools, and obtain input as to the expectations for Science in Leeds and Grenville. Units developed by the Phase II schools will be made available to the system.

Over the two years of the project, twenty-one out of the thirty-six elementary schools in our jurisdiction were given in-service at the school level. They developed programs and resources and now provide a "lighthousing" system across the Board.

As a result of the innovative in-service project, the Leeds and Grenville county Board of Education has been focusing on science in the primary and junior grades:

- A Task Force has been formed.
- A three-year plan for implementing *Science Is Happening Here* in the Primary and Junior grades has been developed and is on schedule in that junior units have been written and will be introduced to the schools in the fall.
- Initial start-up materials are being provided.
- The Ministry/Spectrum kit funding incentive was utilized fully.
- Further kits will be developed for the Teachers' Resource Centre and made available for loan.
- Schools are being encouraged to make science a priority in budget and in-service.
- Principals are encouraged to provide visitation opportunities within and without their schools.
- Board personnel and area resource teachers visit schools to provide support and encouragement.
- A newsletter keeps the teachers aware of new resources and ideas.
- Principals encourage teachers to attend science workshops, e.g. S.T.A.O., F.W., O.P.S.
- Parents are encouraged to visit the schools to see students "at science".
- In-Service opportunities are made available by the Board of P.A. days.

LENNOX & ADDINGTON COUNTY BOARD OF EDUCATION

TITLE

Primary/Junior Science Project - Science Is Happening Here

FOCUS OF PROJECT

Year II of the Project was an extension of the previous year's thrust. The focus was on staff development. Teachers utilized *Science is Happening Here* and system curriculum documents to develop workable science modules/units.

TARGET GROUP

Essentially the project group consisted of one primary and one junior division teacher from each school. The base group comprised 35 teachers.

SPECIAL FEATURES

Year II involved two phases of in-service: knowledge and skill development for writing good science modules and the expansion of coaching in science to include 35 more teachers in the system.

BOARD CONTACT

Dr. L.G. Hadden
Lennox & Addington County Board of Education
264 Camden Rd.
Box 70
Napanee, Ontario
K7R 3M1
(613) 354-3391

PROGRAM SUMMARY

a) The project group participated in a one-day in-system workshop led by Mr. John Ross of the Trent Valley Centre (OISE - Peterborough). Mr. Ross presented a module frame consisting of rationale, objectives, strategies, resources and evaluation to direct teachers in the essential components of writing a module. Half the day was devoted to this theory and its application; the project participants used the remaining time to work in small groups on science units or topics which had presented planning difficulties.

   One additional half-day of supply time was provided to each group to enable them to complete and refine the module prior to testing with their children.

   On January 20, 1989 a half-day sharing session was held. All groups presented their modules and displayed the student-centred activities which had been developed.

   Participants were requested to submit their modules to an editing committee. The committee approved nine of the eleven modules submitted. These have been published for the project group and plans include their future use in supplementing science components of the E.S. program.

b) Each member of the project group was then directed to seek a new coaching partner at his or her school or within the system, and either develop a science module/unit in which the new partner required assistance or coach the new person through the module which the coach had experienced with the project group. Again, supply teacher time was provided to enable teachers to implement coaching in science plans. This component is an extension of the coaching skill development provided during Year I of the Science Project.

We in Lennox and Addington feel both components of this year's Science Project were very successful. The module development session provided an excellent opportunity for teachers to use *Science is Happening Here* as a basis for their science planning and program development to include the inquiry process, thinking skills and provision for active learning. The general knowledge, skill and attitudinal development of the project group and of those involved in this year's coaching project were evident in the evaluation of both components.

OTTAWA ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Science Renewal Schools Project

FOCUS OF PROJECT

In-service/curriculum development support for several schools' staffs

TARGET GROUP

Staffs and teaching partners of six JK-6 schools

SPECIAL FEATURES

In-Service of English/French teaching "pairs" in six lighthouse schools.

BOARD CONTACT

P.A. Benton, Superintendent of Schools (Curriculum)
Ottawa Roman Catholic Separate School Board
140 Cumberland
Ottawa, Ontario
K1N 7G9
(613) 237-5660

PROGRAM SUMMARY

A new Primary/Junior curriculum guideline entitled *Science Is Happening Here* was issued by the Ministry with an effective implementation date of September 1989. In 1987 the Curriculum Department decided, in 1987, to provide general awareness in-service to all schools while offering a more intensive professional development program in science to a select number of schools. The rationale for this approach lay in the fact that both financial and human resources were limited and that a thorough in-servicing of a few school staffs will have a "lighthouse" benefit for the rest. In subsequent years, similar in-servicing can be offered to more schools.

The new guideline was distributed to principals and an introductory package was prepared for staffs. Several principals invited a consultant to present the new guideline to teachers. A discussion of the salient parts of the guideline was included with the presentation. A similar in-servicing has been offered to principals as well.

Central to the Curriculum Departments' activities in science is the Science Renewal Schools Plan. At the Department's general invitation, the following schools agreed to participate in science renewal activities:

St. Brigid School
Our Lady of Mount Carmel School
St. Victor School
Our Lady of Fatima School
St. Elizabeth School
Our Lady of Victory School

The Science Renewal Schools Plan that was developed earlier is attached to this report. Special funding from the Ministry, and an amount matched by the Board, was allocated for the in-servicing of select teachers from these schools. In addition some general activities were included for all teachers of the schools.

Although the original timetable for in-servicing these schools was delayed, the equipment from Spectrum arrived late in December 1988, and the in-servicing is currently underway.

In brief, the renewal program consists of:

1. The assignment of one consultant to plan with each staff.
2. An awareness assessment to help all staff to learn the requirements of the new science guideline.
3. The development of school objectives in science.
4. The in-servicing of the entire staff in the new guidelines.
5. The in-servicing of select teachers in these schools in planning and implementing a science unit, including the utilization of process learning via the science kits.
6. The in-servicing of select teachers is encouraging girls in the pursuit of science.
7. The in-servicing of these school staffs on evaluating the realization of their goals and the setting of new goals.

In subsequent years, more schools may participate in the plan.

The original five kits developed by the Ontario Science Centre, and available through Spectrum have been purchased for these schools. An additional amount has been budgeted for 1989 for the purchase of the next five kits. The final kits of the series will be budgeted for in 1990. Appropriate in-servicing in the utilization of the kits is provided to all schools.

OTTAWA-CARLETON (SECTION CATHOLIQUE), CONSEIL SCOLAIRE DE LANGUE FRANÇAISE D'

TITRE

Renouveau de l'enseignement des sciences aux niveaux primaire et moyen

OBJECTIF DU PROJET-PILOTE

Mise en oeuvre du document *Les sciences, un jeu d'enfant*

GROUPE CIBLE

40 enseignantes et enseignants au cycle moyen
40 enseignantes et enseignants au cycle primaire

CARACTÉRISTIQUES

Les enseignantes et les enseignants ont reçu 12 heures de formation au CAP visant à leur faire vivre une centaine d'activités scientifiques centrées sur l'expérimentation et la manipulation et immédiatement réutilisables dans leurs salle de classe.

LIAISON (au conseil scolaire)

Conseil scolaire de langue française
d'Ottawa-Carleton (section catholique)
1620 Place Blair
Gloucester, Ontario
K1J 9L8

RÉSUMÉ DU PROGRAMME

Toutes les enseignantes et tous les enseignants ont été sensibilisé(e)s au document *Les sciences, un jeu d'enfant* lors des sessions de formation au CAP. L'objectif premier était de démystifier l'enseignement des sciences en faisant vivre aux participantes et aux participants des activités reliées aux thèmes suivants: espace, vie, énergie, matière, temps. Le processus de résolution du problème, l'expérimentation et la manipulation par l'élève sont les approches privilégiées lors des sessions de formation. Les enseignantes et les enseignants ont beaucoup apprécié le fait qu'elles et qu'ils ont reçu un bagage d'activités considérable. Par contre, nous devrons prendre des décisions au niveau systématique quant au suivi à faire auprès de la clientèle touchée. La formation n'est que la première étape de mise en oeuvre.

PRESCOTT & RUSSELL COUNTY BOARD OF EDUCATION

TITLE

1) Various Workshops
2) Workshop - Marine Life
3) Workshop - Water Fun

FOCUS OF PROJECT

1) Unit on Snow
2) Integration of unit on Marine Life with other areas of study
3) Using water play as a teaching unit for Primary/Junior Teachers

TARGET GROUP

1) Primary/Junior Teachers
2) Primary/Junior Teachers (25)
3) Primary/Junior Teachers (35)

SPECIAL FEATURES

3) Coaching teachers how to teach concepts used in Science and Math, using water

BOARD CONTACT

Caroll Carkner
Prescott & Russell County Board of Education
411 Stanley Street
Hawkesbury, Ontario
K6A 3E8
(613) 632-0144

PROGRAM SUMMARY

1) Various Workshops

Photography (Robert Bennett - Jr./Sr.)
Incubation (Jim Burrows - Primary/Junior)
Cor (Richard Dagg, Ella Pilon - Primary/Junior)
Ecole de Neige (Francine Larocque, Richard Gravelle - Pr./Jr.)
Unit on Snow and the integration of Science unit done in French with English subject areas.

2) Workshop - Marine Life

Workshop was set up with presenters sharing many ideas on how to integrate Marine Life theme with areas of study such as Reading, Math, Language, Art. Hand-out was provided. The presenters were Marilyn Cotton and Sandi Richardson. The two ladies have joined the F.W.T.A.O. Professional Development department as workshop presenters for Ontario (when requested).

3) Workshop - Water Fun

The workshops began with the use of story, "Mud Puddle". It was read aloud to participants. Several centres (10) were set up and participants were encouraged to rotate through centres to experience concepts using water:

surface tension
floating & sinking
weight of water
art ideas
volume, etc.

Participants were then given a hand-out containing all the experiences. The presenters were Caroll Carkner and Beth Gow (teachers).

PRESCOTT-RUSSELL, CONSEIL DES ÉCOLES CATHOLIQUES DE

TITRE

Renouvellement de l'enseignement des sciences à l'élementaire.

OBJECTIF DU PROJET PILOTE

Former le personnel enseignant du cycle primaire à animer des activités scientifiques selon les directives de l'énoncé de politique *Les sciences, un jeu d'enfant* (1986).

GROUPE CIBLE

1) Formateur(e)s: 7 personnes specialisées
2) Enseignant(e)s du cycle primaire: 135 titulaires de classe

CARACTÉRISTIQUES

Tous/toutes les enseignant(e)s des cycles primaire et moyen ont reçu une formation RESEL. Cette deuxième année touchait le cycle primaire. Un partenariat fut établi entre chacun(e) des formateur(e)s et une vingtaine d'enseignant(e)s.

LIAISON (au conseil scolaire)

Lise Charland Castonguay
Conseil des écoles catholiques de Prescott-Russell
C.P. 570
L'Orignal, Ontario
K0B 1K0
(613) 675-4691

RÉSUMÉ DU PROGRAMME

1) Formation de personnes specialisées Cours RESEL.
2) Rayonnement du renouveau dans un programme de partenariat (15 heures de formation) comprenant:
   a) une session individuelle de sensibilisation
   b) le montage d'un centre d'apprentissage en salle de classe avec le matériel suggéré
   c) une session d'enseignement mutuel individuelle
   d) la mise à l'essai d'une série d'activités scientifiques en salle de classe.

RENFREW COUNTY BOARD OF EDUCATION

TITLE

Science Innovative In-Service Initiative

FOCUS OF PROJECT

Implementing Active Learning through the Science program

TARGET GROUP

All Primary and Junior Teachers in Renfrew County (230)

SPECIAL FEATURES

- Lighthouse Visitation Program
- Unit Development Program
- Project Wild Workshops
- Host/SAT Collegial Planning Model

BOARD CONTACT

Jeff Hesketh & Nora Schock
Renfrew County Board of Education
250 McKenzie Street
Pembroke, Ontario
K8A 3V7
(613) 735-0151

PROGRAM SUMMARY

During the second year of this program a number of different initiatives were undertaken:

a) Three county-wide professional Activity Days were focused on the implementation of an active science program and included key note speakers, hands-on workshops, development and in-servicing of a number of science kits, and Project Wild sessions.

b) An Activity Resource Document was developed based on the Learning Opportunities specified in *Science Is Happening Here* at the Junior level.

c) A Lighthouse Visitation Program enabled teachers from across the county to visit and meet with other individuals who are currently using exemplary science programs.

d) The study and development of a new core curriculum in Science was begun and completed for the Primary Division.

e) The Primary Division developed and in-serviced four Science kits and ten resource units for use throughout the county.

f) The role of our Computer Resource Teachers has been redefined and the position has been renamed "Junior Special Assignment Teacher". They are now utilizing a peer-coaching/collegial planning model to implement active learning in Junior Division classrooms using Science as a vehicle to achieve that goal.

STORMONT DUNDAS AND GLENGARRY COUNTY BOARD OF EDUCATION

TITLE

Teachers Helping Teachers

FOCUS OF PROJECT

The initiation and co-ordination of a "Lighthouse Program" to involve teachers of Science in the sharing and exchange of ideas, methodology and resources.

TARGET GROUP

Primary/Junior Lighthouse teachers - 15
Primary/Junior Teachers involved in exchanges - 150

SPECIAL FEATURES

In-Service and training of Lighthouse teachers using workshops and planning sessions.

Teacher exchanges and coaching using workshops, class visitations and interdisciplinary sessions.

BOARD CONTACT

Gerrit Mollinga
Stormont Dundas and Glengarry County Board of Education
902 Second Street West
Cornwall, Ontario
K6H 5S6
(613) 933-6990

PROGRAM SUMMARY

September 1988:	Inter-regional Lighthouse Session (Kingston)
October 12-15, 1988:	Inter-school Lighthouse Visitations
November 2, 1988:	Integrated Theme Workshop: Magic
November 25, 1988:	Board-wide P.A. Day
March 29, 1989:	Integrated Theme Workshop: Wheels
May 1989:	Lighthouse Session (Ottawa)

STORMONT DUNDAS ET GLENGARRY, CONSEIL DES ÉCOLES SÉPARÉES CATHOLIQUES DES COMTÉS DE

TITRE

R E S E L

OBJECTIF DU PROJET PILOTE

Offrir une formation aux enseignants des cycles primaire et moyen afin qu'ils soient en mesure de mettre en oeuvre le document *Les sciences, un jeu d'enfant.*

GROUPE CIBLE

suivi pour les enseignants du cycle moyen: 14 personnes
formation initiale pour les enseignantes du cycle primaire: 54 personnes

CARACTÉRISTIQUES

- formation initiale de 2 journées complètes en dehors de la salle de classe
- suivi assuré par les formatrices qui se rendent dans les salles de classes à la demande des enseignants

LIAISON (au conseil scolaire)

Madeleine Major, Coordonnatrice des services des programmes d'études
Écoles catholiques des comtés de Stormont Dundas & Glengarry
1104 est, première rue
Cornwall, Ontario
K6H 1N6

RÉSUMÉ DU PROGRAMME

Au cycle moyen

déc. 1988: 14 enseignants mutés reçoivent une formation initiale d'une journée avec nos 2 formatrices.

fév. 1989: tous les enseignants ont l'occasion de recourir aux services de nos 2 formatrices pour une demi-journée de suivi par école.

Au cycle primaire

Automne 1988: 3 personnes reçoivent la formation de 9 jours à l'université d'Ottawa.

Avril 89: tous les enseignants reçoivent 2 journées de formation avec nos 3 formatrices.

Automne 1989: On assurera un suivi par nos 3 formatrices au début de l'année scolaire 1989-90 ainsi qu'une formation initiale aux enseignants mutés.

MIDNORTHERN ONTARIO REGION

CENTRE-NORD DE L'ONTARIO

CENTRAL ALGOMA BOARD OF EDUCATION

TITLE

Primary/Junior Science Innovative In-Service, Year II

FOCUS OF PROJECT

Science

TARGET GROUP

Elementary Staff J.K. - 6
(approximately 70 teachers)

SPECIAL FEATURES

See below

BOARD CONTACT

Mr. Melvin L. Baird
Director of Education
Central Algoma Board of Education
P.O. Box 10
Richards Landing, Ontario
P0R 1J0
(705) 246-2441

PROGRAM SUMMARY

Development of science resources and activity-based science units for JK-8 through the organization of the School Improvement Project at St. Joseph Island Central School. An internal Science Improvement Team was established at this school. This team narrowed the focus for the unit and resource development with the help of Orpwood Associates. This process took approximately one year. Following the delineation of the project parameters and specific work begun on science units the project was expanded to include expertise from all schools in the system. This enabled simultaneous development of teacher resources utilizing the progress made by the S.I.P. at St. Joseph Island School. This project will continue with the ongoing development of resources and units as well as implementation utilizing the Key Teachers in each school until 1992.

The Board has hired a consultant for the elementary system to coordinate this development and arrange the implementation of the professional development process.

The grant from the Ministry of Northern Development and Mines has assisted in this process by providing funds to upgrade our equipment for active-learning settings.

CHAPLEAU PUBLIC SCHOOL

TITLE

Science Now!

FOCUS OF PROJECT

To develop (1988-89), field test (1989-90) and fully implement (1990-91) a primary Science curriculum (k-3). To field the junior Science curriculum developed in 1987-88.

TARGET GROUP

K-3 students in Public Schools of Chapleau, Wawa, and Missanabie. Grade 4-6 students in Chapleau and Wawa.

SPECIAL FEATURES

The project was a cooperative venture by a curriculum writing team of 10 teachers from the public schools of Wawa, Chapleau and Missanabie.

BOARD CONTACT

Mr. Shane Wright
Chapleau Public School
Box 220
Chapleau, Ontario
P0M 1K0
(705) 864-1750

PROGRAM SUMMARY

Attached is draft copy of the introduction to "Science Now!", a primary science curriculum specifically designed to enhance and extend science activities in primary classrooms. The introduction includes:

- Table of Contents
- Activity Guides
- A description of the year's activities by the joint curriculum writing team
- Curriculum overview
- Organization and content
- Resource Model - Organization
- Activity Guides
- Evaluation Energizers for the primary student
- Student evaluation guidelines
- Sample worksheets for field testing in 1989-90
- Topic index - Contents

Also included is a list of equipment and materials for Science Units in "Science Now!"

MANITOULIN BOARD OF EDUCATION

TITLE

Primary-Junior Science Steering Committee

FOCUS OF PROJECT

To provide leadership in the implementation of *Science Is Happening Here.*

TARGET GROUP

All Primary/Junior teachers - 40

SPECIAL FEATURES

- Leadership experiences for female teachers
- Teacher developed/directed project
- Increased impact through key teacher concept
- Effective implementation process
- Coaching model used extensively

BOARD CONTACT

D.M. Hall
The Manitoulin Board of Education
P.O. Box 489
Little Current, Ontario
P0P 1K0
(705) 368-2860

PROGRAM SUMMARY

The Primary-Junior Science Steering Committee has provided invaluable direction to the teachers of Manitoulin in the implementation of the Ministry document *Science Is Happening Here.*

The approach has been unique for this jurisdiction in that the committee is comprised of a key teacher from each elementary school. This committee established as their objectives a review of science education within the system and the development and implementation of activities to close the gap between "what is" and what is expected in the Ministry document.

The committee has participated in extensive personal in-service through a broad reading of current literature, guest speakers and attendance at conferences such as STAO and the recent Ministry Science Conference. The ideas, strategies, material and knowledge gained from these experiences were then shared by each member with his or her home school colleagues.

In addition a series of hands-on workshops was provided to all P-J teachers. These offered participants an opportunity to experience some of the new science programs.

Following the workshops, a wide range of science outlines was purchased and organized into a kit. This kit is now being presented in each school by the key teachers as a source of materials for their individual science programs.

The process is innovative in that the teachers on the committee have determined the agenda and the timelines. They are now involved with their individual schools in the implementation process.

The experience has provided an opportunity for the committee members to develop their leadership skills, and an awareness of science education and of implementation process. Membership on the committee is 5 women and 1 male. Thus female staff are experiencing and being seen as providing leadership in the system.

The project will continue, since there is no completion in sight as yet.

MICHIPICOTEN BOARD OF EDUCATION

TITLE

Science Now

FOCUS OF PROJECT

An integrated real world approach to science that emphasizes child-centred activities, that addresses the needs of exceptional children, and that addresses the needs of girls

TARGET GROUP

Teachers of Kindergarten to Grade 3 (16), Primary, Junior and Intermediate teachers of SEES in mid-northern Region (85)

SPECIAL FEATURES

A unique "task group" organization was created by three northern Boards to develop and implement a Junior Science Curriculum to meet the needs of our student population.

BOARD CONTACT

F. LeFeuvre
Michipicoten Board of Education
P.O. Box
Wawa, Ontario
P0S 1K0
(705) 856-2517

PROGRAM SUMMARY

Ten primary teachers from the Chapleau, Wawa and Missanabie areas met throughout the year to develop the new Science curriculum entitled "Science Now".

Science Now is a process oriented curriculum containing 230 activity guides representing three broad science area: Life,Earth and Space, and Physical Science. Activity guides are organized among 17 themes which are consistent with the learning activities identified in *Science Is Happening Here*, Ontario Ministry of Education, 1988. All themes and related activity guides are colour-coded, interdisciplinary and contain a checklist of attitudes, skills and knowledge components. A resource guide is also available. All activity guides have been cross-referenced according to the topic. Field testing/validation was scheduled to begin in area schools in September 1989.

MISSARENDA DISTRICT SCHOOL AREA BOARD

TITLE
Science Now

FOCUS OF PROJECT
Primary Science

TARGET GROUP
Kindergarten to Grade 3

SPECIAL FEATURES
Project has been localized to make use of the many individual characteristics of our community and its area. (i.e. nature trail, fishermen, resort owners, miners).

BOARD CONTACT
Mrs. Anna Donald
Missarenda District School Area Board
Missanabie, Ontario
P0M 2H0
(705) 234-2820

PROGRAM SUMMARY

The curriculum is child-centred. The child's experiences in the everyday world are a necessary prerequisite to the learning situation and the importance of this experiential background cannot be overemphasized.

Inquiry and discovery are the themes permeating this science curriculum. Curriculum organization employs a wide variety of group experiences. The child is an active participant in total group, small group and individual learning situations.

Evaluation is an essential component of any science curriculum. This curriculum provides opportunity for self-evaluation, peer evaluation. Careful observation by the teacher is of utmost importance in evaluating the student.

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TITLE
Junior Science Curriculum Writing

FOCUS OF PROJECT
Junior Science

TARGET GROUP
Grades 4, 5 & 6

SPECIAL FEATURES
- The attempt to develop innovative teaching strategies
- A process rather than content program
- Attention paid to student growth in skill development

BOARD CONTACT
Mrs. Anna Donald
Missarenda District School Area Board
Missanabie, Ontario
P0M 2H0
(705) 234-2820

PROGRAM SUMMARY

The Junior Science programme has not been completed at this time. Consolidation of materials and printing is required. The basis for the programme was adapted from the Curriculum of the Timmins and Muskoka Boards of Education. Curricula from other Boards of Education were also used.

The Junior Science and Social Studies programme is based on Dr. Floyd Robinson's Growth Strands with the development of problem-solving skills. Students are expected to develop understanding and to approach in a self-directed way the self, the family, the community, and the nation.

The seven particular kinds of problem solving in the programme are:

a) causal reasoning
b) decision-making
c) comparing
d) time series
e) classifying
f) constructing simple systems
g) topic elaboration

An integral part of the program is the inclusion of M.N.R.'s Project Wild which is to be complete on June 9, 1989.

SAULT STE MARIE BOARD OF EDUCATION

TITLE

Innovative Science Project

FOCUS OF PROJECT

Implementation of Active Learning through *Science Is Happening Here*: Junior Division

TARGET GROUP

Junior Teachers - 39
Principals - 12
Librarians - 8
Special Education Classroom teacher - 2

SPECIAL FEATURES

School-based teams
External coaches
Demonstration classrooms

BOARD CONTACT

Nancy Golec
Special Assignment, Science
Sault Ste Marie Board of Education
644 Albert Street East
Sault Ste Marie, Ontario
P6A 2K7
(705) 945-7221

PROGRAM SUMMARY

Year II of the Sault Ste. Marie Innovative Science Project has created much enthusiasm in our system for both Science and Active Learning. Our influence was not limited to project participants, but spread to other schools and staff members as well. Many schools have chosen to concentrate Professional Development time and funds on the implementation of *Science Is Happening Here* during the next three years.

Our project expanded from 37 to 62 participants including 39 junior classroom teachers, 12 principals, 8 librarians and 2 special education classroom teachers. A group of 8 coaches was formed. With the guidance of the Special Assignment Teacher they met once a month for professional development and worked as requested in their own schools and, by invitation, in schools which joined the project this year. Their classrooms served as demonstration classrooms and proved a valuable resource for all teachers.

In all cases the schools which participated in the project included the entire junior division and the principal. In many cases the librarian or a junior level special education teacher was also involved. This greatly facilitated collaborative learning, including time to plan together and to evaluate results as the year progressed. The change process was aided by this support system.

SAULT STE MARIE DISTRICT ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Science in the Primary & Junior Division Innovative In-Service

FOCUS OF PROJECT

Development of Science Integrated Units In-Service

TARGET GROUP

Principals, teachers J.K.-Gr. 6
(approximately 100 teachers & principals)

SPECIAL FEATURES

Peer coaching

BOARD CONTACT

John DeFazio, Superintendent of Personnel
Sault Ste Marie District Roman Catholic Separate School Board
169 Spring St.
Sault Ste Marie, Ontario
P6A 3A4
(705) 949-4400
FAX (705) 949-4503

PROGRAM SUMMARY

The project addressed the need for an approach to learning that focuses on the aspects of child-centred and integrated learning experiences.

Staff (Group A) assigned to the project included one Supervisory Officer, one Curriculum Coordinator, one Primary Consultant, one Media Resource Coordinator, one Computer Coordinator and two school principals.

Staff (Group B) included two teachers from each of the following: J.K., S.K., Gr. 1, Gr. 2, Gr. 3, Gr. 4, Gr. 5, and Gr. 6. Units were developed as per the document *Science Is Happening Here*. Peer coaching strategies proved to be very effective in this area.

The project began in February, 1988 and concluded in December, 1989 with in-service provided by the previously named staff for all teachers and principals J.K.-Gr. 6.

From January 1989 to May 1989, implementation of the new science units began across the system with the assistance of staff Group A and Group B.

It appears that the project was a valuable experience for staff, students and parents. Feedback has been fair and quite positive.

SUDBURY BOARD OF EDUCATION

TITLE

Life Long Learning - Inquiry Approach to Science

FOCUS OF PROJECT

- To promote the image learner
- To develop innovative professional development for teachers
- To develop hands-on science kits

TARGET GROUP

Primary/Junior Teachers (approx. 250)

SPECIAL FEATURES

1. Gap analysis of *Science Is Happening Here*
2. Adoption of a science teaching process, The Conceptual Change
3. Initial development of a science kit resource centre
4. Identification of self-directed learning skills for science
5. Production of computer-imaged professional development slides
6. Development of a computer program and teachers' guide for writing science lessons, units or courses of study
7. Sample of a science unit written to promote self-directed learning
8. A theoretical basis for all future professional development in science

BOARD CONTACT

Margaret Winckel, Superintendent
The Sudbury Board of Education
200 Brady Street
Sudbury, Ontario
P3E 5K3
(705) 674-3171

PROGRAM SUMMARY

1. Gap Analysis - In June 1988 a group met to do a gap analysis of the Ministry curriculum guideline, *Science Is Happening Here*. It was found that there was little difference between the Sudbury Board of Education's Primary/Junior science program and that outlined in *Science Is Happening Here*.

2. Science Kits - The following Science kits were identified as needed based on difficulty of subject matter or expense of equipment required.

   I'm A Scientist (Primary)
   Weather (Primary/Junior)
   Lenses & Microscopes (Primary/Junior)
   Magnets (Junior)
   Mining (Junior)
   Astronomy (Junior)
   Batteries & Bulbs (Junior)

3. Pilot Schools - Three pilot schools were identified so that we could have principals and classroom teachers involved collaboratively in the development of a model of the self-directed learner. We explored what changes would occur if we were to implement self-directed learning. High quality English and French graphic slides were developed to be used to explain self-directed learning.

4. Self-Directed Learning Skills - Three consultants (Marie Huss, Sue Stuart and Jim Darach) planned professional development strategies to share generic self-directed learning skills with teachers in an interdisciplinary and integrated manner.

   Jim Darrach (Consultant, Environmental Studies) developed a curriculum writing module, complete with computer software and a teacher's guide, which allows teachers to build self-directed learning skills into their daily lessons, units or courses of study.

5. Approach - We initiated a science program based on the latest research in the field of science teaching. We mounted a number of workshops for teachers on "Teaching for Understanding in Science".

6. In-Service - Funding allowed us to release pilot school teachers for intensive small group work; they could network with other teachers at their grade level. Inter-classroom visitation was supported whenever requested. Lighthouse Science Teachers were identified at all grade levels.

7. Celebration of Science - We received permission to use some of our implementation funding to send teachers as well as one superintendent to this conference. Jim Darrach was one of the presenters and shared at the provincial level the work we had done on self-directed learning in science.

SUDBURY DISTRICT ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Innovative In-Service Program

FOCUS OF PROJECT

To devise activities to support the philosophy and learning opportunities *Science Is Happening Here* and in-service teachers with regard to same.

TARGET GROUP

K-6 teachers
Special Education teachers
225 teachers

SPECIAL FEATURES

The Innovative In-Service team attains a level of expertise which is then channeled to school representatives who in turn become the experts within the school.

BOARD CONTACT

Mr. Rino Ouellette
Sudbury District Roman Catholic Separate School Board
201 Jogues Street
Sudbury, Ontario
P3C 5L7
(705) 673-5621

PROGRAM SUMMARY

Following the first phase of familiarization, gap analysis and in-service, this phase involved developing sample kits and units. The purpose was to help ensure that students would be presented with learning opportunities in a manner consistent with the Science Policy Statement.

An important component of this final phase is the in-service required prior to teachers booking a kit. This aspect of the program involves a quasi-peer coaching situation.

To date this has been a very beneficial program in assisting with our ongoing implementation of *Science Is Happening Here*.

SUDBURY, CONSEIL DES ÉCOLES SÉPARÉES CATHOLIQUES ROMAINES DU DISTRICT DE

TITRE

Fiches pour les classes de la maternelle à la 6e année selon les objectifs du programme-cadre: Les sciences, un jeu d'enfant.

OBJECTIFS

- Sensibiliser les enseignants/es, directeurs/trices et surintendants/es à la philosophie du nouveau programme-cadre: *Les sciences, un jeu d'enfant.*
- Préparer des fiches de la maternelle jusqu'à la 6e année basées sur l'utilisation des trousses scientifiques placées au niveau de chaque école élémentaire par le Conseil. Ceci fut rendu possible grâce aux subventions du ministère du Développement du Nord et des Mines.

GROUPE CIBLE

Selon l'inscription de septembre 1988:
6222 élèves de la maternelle à la 6e année
40 enseignants/es de la maternelle et jardin
91 enseignants/es de la 1e à la 3e année
97 enseignants/es de la 4e à la 6e année

CARACTÉRISTIQUES

La série de fiches préparées sera utilisée au niveau de chaque école élémentaire en 1989-90. L'équipe a déjà utilisé les fiches lors de l'année scolaire 1988-89.

Les fiches seront utilisées dans le but d'encourager l'élaboration de centres d'apprentissage répondant aux objectifs du nouveau programme-cadre.

LIAISON (au conseil scolaire)

M. Léo Lefebvre
Conseil des écoles séparées catholiques romaines du district de Sudbury
201, rue Jogues
Sudbury, Ontario
P3C 5L7

RÉSUMÉ DU PROGRAMME

La sensibilisation du groupe cible au programme-cadre fut initiée lors de l'année scolaire 1987-1988 lors des 15 journées pédagogiques flottantes. Ceci a permis une rencontre de tous(tes) les enseignants/es afin de présenter l'ébauche du document et les trousses scientifiques.

- atelier sur la philosophie et le processus d'évaluation par observation
- initiation des enseignant(e)s aux nouveaux objectifs
- 6 enseignant(e)s à la conférence Expéri-Sciences en mars 1989.

Lors de six journées de rédaction, l'équipe d'enseignants/es a pu compléter les fiches pour les trousses d'air et d'électricité. Ces fiches sont présentement dans le rouage de la publication.

Le Conseil a permis à trois enseignantes d'élaborer un guide pour les visites de classes à Science Nord. Ceci saura permettre aux enseignants/es de faire le lien entre les programmes scolaires offerts à Science Nord et les objectifs du nouveau programme-cadre *Les sciences, un jeu d'enfant.*

NORTHEASTERN ONTARIO REGION

NORD-EST DE L'ONTARIO

EAST PARRY SOUND BOARD OF EDUCATION

TITLE

Child-Centred Science Learning Environments

FOCUS OF PROJECT

a. To develop teaching strategies and training programs to promote effective instruction in all junior division grades to meet the needs of all students.

b. To survey the junior division science teachers to determine gaps in present and desired attitudes toward science and to formulate a plan to lessen the gaps.

TARGET GROUP

Junior division science teachers and principals, approximately 50 teachers.

SPECIAL FEATURES

1. An attitudinal survey was conducted and feedback was provided to students, teachers and principals.
2. A coaching workshop was held, led by Ken Drope, for principals and consultants.
3. In-service workshops were conducted with emphasis on innovative methodologies and materials. Leaders such as Les Asselstine were involved.
4. All junior division teachers, principals, and consultative staff have been co-operatively involved in this project.
5. A continuation of the coaching workshop is planned for the fall of 1989.

BOARD CONTACTS

Norman J. Mason
East Parry Sound Board of Education
P.O. Box 40
South River, Ontario
P0A 1X0
(705) 386-2387

PROGRAM SUMMARY

Through meetings and consultation with the principals and staff, a climate for change was established. A survey of attitudes toward science was conducted involving teachers and students. It was interesting to note that the majority of students enjoyed working in the science program, particularly in the experimentation and research areas. No significant difference in attitudes between boys and girls or among the three grade levels was noted. Due to the awareness of gaps, changes in teaching methodologies were encouraged.

KAPUSKASING, CONSEIL DES ÉCOLES SÉPARÉES CATHOLIQUES ROMAINES DU DISTRICT DE

TITRE

Equipe pour la promotion, l'avancement et l'intégration des sciences à l'élémentaire

OBJECTIF DU PROJET-PILOTE

Améliorer le processus de l'enseignement en préconisant l'approche du document d'appui *Une découverte partagée au cycle primaire.* Appuyer davantage sur l'intégration des sciences dans les autres matières scolaires.

GROUPE CIBLE

Tous les enseignants de la Maternelle à la sixième année.

CARACTERISTIQUES

Il s'agissait de préparer une équipe d'enseignants qui serviraient de personnes-ressources dans toutes nos écoles, pour ateliers spécialisés, pour consultations personnelles, pour faire du "team teaching" et pour implanter le document dans le système à long terme.

LIAISON (au conseil scolaire)

Gérald Hurtubise, surintendant de l'éducation
[Kapuskasing Roman Catholic Separate School Board]
75, rue Queen
Kapuskasing, Ontario
P5N 2B6
(705) 335-6091
Telecopieur: (705) 335-8258

RÉSUMÉ DU PROGRAMME

Le programme avait pour but premièrement de sensibiliser les enseignants au renouveau des sciences aux niveaux primaire et moyen préconisé par la politique ministérielle du document *Science, un jeu d'enfant.* Aucun de nos enseignants à ces niveaux n'avait de formation scientifique mais certains démontraient un intérêt soutenu pour ce domaine.

Il s'agissait aussi d'informer nos enseignants du changement éminent dans l'approche de l'enseignement des sciences aux cycles primaire et moyen, et de les familiariser avec un certain nombre d'activités qui pourraient être réintroduites pour s'orienter vers la nouvelle direction.

Nous avons ensuite formé une équipe de personnes-ressources qui s'occuperont d'introduire la nouvelle philosophie de l'enseignement des sciences dans nos écoles. Ces mêmes personnes, sous la direction de notre coordonnateur et avec l'aide de personnes spécialisées, ont contribué à l'essai quelquefois en septembre.

Notre équipe de personnes spécialisées continuera d'apporter dans toutes nos écoles de l'aide au niveau de l'implantation et de la mise en oeuvre du programme. Elles s'occuperont d'organiser des ateliers, de donner des conseils et de faire du "team teaching" avec les enseignants qui en feront la demande.

Nous sommes particulièrement reconnaissants à monsieur Jacques Larochelle pour l'aide précieuse qu'il a apportée au projet dans le domaine de la communication inter-conseil et de la coordination des efforts pour compléter un produit final qui sera apprécié par tous les enseignants de tous les conseils du Grand Nord.

KIRKLAND LAKE BOARD OF EDUCATION

TITLE

Science In-Service Project

FOCUS OF PROJECT

Changing classroom practice to effect congruency between behaviour suggested by the science guidelines and teacher users.

TARGET GROUP

52

SPECIAL FEATURES

1) Needs Assessment
2) In-Service
3) Peer Coaching
4) Learning Lab

BOARD CONTACT

Lynne Sauer, Co-ordinator of Program
Kirkland Lake Board of Education
P.O. Box 610
Kirkland Lake, Ontario
P2N 3J9
(705) 567-3271

PROGRAM SUMMARY

1 Initiatives Related to Knowledge and Skill Development

a) Major research project on status of science teaching in the Kirkland Lake Board of Education undertaken by Heather Gillett, Nat Reed and Dr. Floyd Robinson of O.I.S.E. Report available upon request.

2 Initiatives Related to Resources and Materials

a) Development of 6 Board resource kits.
b) Implementation of their use.

3 Initiatives Related to Incentive, Motivation and Support

a) Learning Lab Classrooms
b) Peer Coaching
c) In-service

KIRKLAND LAKE, CONSEIL DES ÉCOLES SÉPARÉES CATHOLIQUES DU DISTRICT DE

TITRE

Les sciences au primaire et moyen

OBJECTIF DU PROJET-PILOTE

Développer un contenu de cours adapté aux besoins spécifiques des élèves et explorer des façons d'intégrer les sciences aux autres matières.

GROUPE CIBLE

Enseignants(tes) du cycle moyen et plus particulièrement un groupe de 3 enseignantes.

CARACTERISTIQUES

Groupe de travail - en collaboration avec le C.E.S. de Timiskaming.

LIAISON (au conseil scolaire)

Louise Trahan
Conseil des écoles séparées catholiques de district de Kirkland Lake
Sac Postal 3910
Kirkland Lake, Ontario
P2N 3P4
(705) 567-3327

RÉSUMÉ DU PROGRAMME

Le programme avait deux volets:

a) Rédaction des contenus de cours.

En collaboration avec trois enseignants(tes) du C.E.S.C. de Timiskaming, 3 enseignantes du cycle moyen ont participé au projet de rédaction des contenus de cours, projet qui regroupait les divers conseils de la Région du nord-est. Ces enseignantes ont développé un guide de l'enseignant(e) pour concrétiser l'unité "Les sciences de la terre et de l'espace - cycle moyen" dans *Les sciences un jeu d'enfant*. Ces rencontres se sont échelonnées de novembre à avril pour une durée de 5.5 jours. La grève des enseignants(tes) de Kirkland Lake a mis fin prématurément au projet.

b) Projet d'intégration.

Avec l'aide de Mme J. Beauchemin des Services consultatifs de langue française, deux enseignantes du cycle moyen on exploré des façons d'intégrer les sciences aux autres matières. Les rencontres ont commencé en octobre et se sont poursuivies jusqu'en avril pour une durée équivalente à 3 jours. Encore une fois, la grève des enseignants(tes) a forcé temporairement l'abandon du projet.

MUSKOKA BOARD OF EDUCATION

TITLE

Primary/Junior Science Renewal

FOCUS OF PROJECT

To address the initiatives listed in A Statement of Directions, 1986 as it pertains to teacher in-service.

TARGET GROUP

Primary and Junior teachers

SPECIAL FEATURES

Pilot sites

BOARD CONTACTS

Wayne Weaver
Superintendent - Program
Muskoka Board of Education
Box 750
Bracebridge, Ontario
P0B 1C0
(705) 645-8704

PROGRAM SUMMARY

Science kits and integrated science units were developed for the teachers. In the first year, pilot sites were identified. These teachers attended conferences and were provided with workshops. These became the centres of innovation and other teachers were scheduled for half-day visits. Workshops were provided at school and system level on methodology, resources and student evaluation. Peer networking was encouraged and facilitated through meetings. Workshops on peer coaching were provided (this is a complex innovation to implement successfully). Peer networking and mentors for beginning teachers were more universally acceptable and effectively implemented. Principals were regularly involved in planning meetings and implementation workshops. Each division in the schools has currently begun a mandatory annual review using an implementation profile. Most planning is now done on a school division level with principal and central office support. This initiative will continue for another three years.

NIPISSING BOARD OF EDUCATION

TITLE

Primary/Junior Environmental Studies Project

FOCUS OF PROJECT

Planning Environmental Studies curriculum in school-based projects supported by Board-wide involvement in-service related to inquiry learning and classroom methodology.

TARGET GROUP

JK to Grade 6 teachers and principals from 18 schools (approximately 170 teachers)

SPECIAL FEATURES

Primary:

- team building in schools around planning of environmental studies units and kits
- optional involvement in Primary Additional Qualifications course
- Environmental Studies presentations and discussions in 3.5 P.A. Days and 6 after-school meetings for all primary teachers
- development of 19 primary Environmental Studies units

Junior:

- team building in-schools around planning of Environmental Studies units and kits
- a junior consultant working with each team
- Environmental Studies workshops on 3.5 P.A. days and after-school presentations by junior teachers who developed exemplary studies units

BOARD CONTACT

Paul Moffat, Superintendent of Education (Program)
Nipissing Board of Education
P.O. Box 3110
North Bay, Ontario
P1B 8H1

PROGRAM SUMMARY

Primary

1. A committee of teachers, principal, consultant and superintendent developed an exemplary unit for children in JK to Grade 3 using an environmental topic; this unit demonstrated an integrated approach, a balance in teacher-directed and child-directed activities and an approach to planning knowledge and skills objectives. It was based on growth schemes for observing and planning for children in inquiry and a very short staff manual.
2. Teachers in each school worked in a team to develop an environmental studies unit. As they worked they developed knowledge about child development through the primary division, knowledge and skills for a planned activity and adapting that activity to skills at different levels, classroom methodology to promote active learning.

3. Teachers spent a great deal of time planning the visit in meetings after 4:00 p.m. and also attended P.A. day and after-school sessions on: inquiry skills from Shared Discovery, Project Wild, communication with parents, physical science workshop. They shared activities from the units with each other after each school attempted to implement their own planned unit.

4. Approximately half (50) of the teachers registered in one of two Primary Additional Qualifications courses with Nipissing University. Courses were planned to include time in evening sessions and also Board P.A. day sessions. One of the course assignments was the development of a unit.

5. The units were published and kits compiled according to the writers' plans. These are now available to all teachers through our Learning Materials Centre. A teachers' observation guide for inquiry learning has been refined and is being introduced. An inquiry folder for late primary children is frequently used.

Junior

1. Junior consultant developed an exemplary unit and a board environmental studies junior staff manual. This included descriptions of knowledge, inquiry skills and attitudes to be developed in any junior environmental studies program.

2. Teachers in each school developed a scope and sequence chart for the junior division: the program topics for each grade included units in matter and technology, earth and space science, living things, past times, beyond our borders, our community in Canada.

   Teachers selected a topic at one grade level and developed a written unit and kit around this topic.

   In writing the unit the teachers became more knowledgeable about inquiry, about topic elaboration and about some methodology for active learning and an integrated approach. In addition there was the opportunity for exchange of views and discussion about children's learning and classroom methodology. The document *Science Is Happening Here* was a major focus for thinking. Consultants worked closely with each junior team.

3. The teachers spent a great deal of time in school meetings after 4:00 p.m. and in addition attended several P.A. Day sessions where they also worked with all teachers in the Board on understanding the inquiry process through such activities as: junior teachers sharing successful units and activities, Project Wild, grade level discussions, physical science workshops, creative problem solving and group work in the junior division.

4. The 23 school units were published and kits prepared for use by all teachers. These units are now available at the Board office, and teachers are able to call on the expertise of the writers of the units when implementing a unit in their classroom. An inquiry foldout for students is in use at the early junior level and a cumulative folder for student planning and self-evaluation is being piloted at the late junior level.

TIMISKAMING BOARD OF EDUCATION

TITLE
Timiskaming Board of Education P/J Science Renewal Project

FOCUS OF PROJECT
Evaluation of current Environmental Studies Program, gap analysis of this program and the development of a science program which would provide staff with a high level of knowledge and comfort with the Ministry Initiatives.

TARGET GROUP
Teachers of Primary/Junior Divisions and Principals of these teachers (82 staff members)

SPECIAL FEATURES
The features of this project are outlined in the "Program Summary" which follows.

BOARD CONTACT
Douglas G. Bolger
Timiskaming Board of Education
R.R. #1, River Road
New Liskeard, Ontario
P0J 1P0
(705) 647-7394

PROGRAM SUMMARY

The Science Renewal Project was initiated through a workshop for the teachers in these divisions. On November 4, 1989 a session was presented at New Liskeard Public School for all Primary/Junior Teachers.

The purpose of this workshop was to introduce the staff to the *Science Is Happening Here* document. Emphasis was placed on the following components:

- activity-based programming
- language across the curriculum
- evaluation

In relation to these components, presentations and discussions were held on the following aspects of science at the Primary/Junior level:

- The Role of the Teacher
- Problem Solving
- A Balanced Program
- Language
- Integration
- Knowledge Objectives
- Resources
- Skill Objectives
- Assessment and Evaluation
- Attitudinal Objectives
- Computers
- Play

From this workshop teachers volunteered to serve on the Renewal Project and a Committee consisting of six teachers and the Curriculum and Professional Development Officer was formed. The teachers serving on this Committee represented the Primary Division, Junior Division, French Immersion and the Intermediate Division. This committee reported to the Superintendent of Schools.

The initial task of the Project was to review our curriculum document, *Experiences in Environmental Studies* (1984), in order to determine its relationship with the initiatives of the *Science Is Happening Here* guideline. Our current document was found wanting with respect to *Science Is Happening Here* and the availability of resources to support the document was less than adequate.

Next the committee reviewed sample curricula from the following boards:

- Durham Board of Education
- Toronto Board of Education
- Perth County Board of Education
- Timmins Board of Education
- East Parry Sound Board of Education
- Kent County Roman Catholic Separate School Board
- York Region Board of Education

The purpose of this review was to consider the adaptation of a curriculum from one of the above Boards to the needs of the Timiskaming Board of Education.

The Kent County Roman Catholic Separate School Board's material was best suited to our needs. An agreement was reached to permit our use of their material and the Committee then proceeded to make the necessary changes to reflect the local resources and to identify the materials required to implement this program.

The curriculum was oriented towards an activity-based program; therefore, the Committee placed an emphasis on providing schools with kits to support the program.

Through this project initiative, twenty kits were purchased from the Series One and Series Two offered by the Ontario Science Centre through Spectrum. Series One kits were piloted tested during the late winter and spring of 1989, while Series Two kits were not available for piloting prior to the end of the school year.

The cost of copying and preparing the curriculum documents was allocated to this project.

Future Plans

The Renewal Project will be continued through the 1989-90 School Year. The Committee will meet during the month of July to plan the in-service and details of implementation of the curriculum package along with the science kits. Funds allocated from grants from the Ministry of Northern Development and Mines will permit the creation of local science kits to further support the curriculum and provide an example to schools on how to establish their own kits for units not having kits available centrally. These grants will also provide resource books specifically selected to support the curriculum. Further use of these grants has permitted each school to purchase resources to meet their program needs.

Curriculum materials will be in the hands of each teacher by September 1, 1989 and a in-service session will be held September 29, 1989 to review the materials and the use of the Science Kits in the classroom.

The Committee will also seek to further develop curriculum resources for:

- Junior Kindergarten
- Kindergarten
- French Immersion
- Outdoor Education

This has been a rewarding exercise and will surely serve to enhance the quality of Science education in our jurisdiction. The students will be the benefactors and that is what it is all about!

TIMISKAMING, CONSEIL DES ÉCOLES SÉPARÉES CATHOLIQUES DU DISTRICT DE

TITRE

Projet du Conseil des écoles séparées catholiques du district de Timiskaming

OBJECTIF DU PROJET-PILOTE

- Par le truchement de la Science, mettre sur pied des centres d'apprentissage pour favoriser l'intégration des matières
- Développer un système d'enseignement mutuel pour venir en aide aux enseignantes et aux enseignants
- Identifier et proposer des modèles de rôle positif aux jeunes filles
- Promouvoir l'enseignement des sciences de façon que l'enfant soit actif, fasse des choix, prenne des décisions et solutionne des problèmes

GROUPE CIBLE

Primaire (1ère, 2e, et 3e)

CARACTERISTIQUES

Enseignement mutuel

LIAISON (au conseil scolaire)

Jean-Louis Schryburt
Conseil des écoles séparées catholiques du district de Timiskaming
21, rue Armstrong
C.P. 309
New Liskeard, Ontario
P0J 1P0
(705) 647-7304

RÉSUMÉ DU PROGRAMME

Analyse du programme "Étude du milieu" en relation avec les programmes de "français, mathématiques et anglais en 3e année".

A l'aide de personnes-ressources et selon le modèle d'enseignement mutuel, aider à élaborer et mettre sur pied des centres d'apprentissage - un total de 8 enseignants ont été impliqués dans ce processus sur une période de 2 ans.

Le système de coaching prévu s'est concentré sur le niveau primaire où ont travaillé alors une enseignante de 1ère année et une en 3e. Dès janvier 1989, une classe de 2e année (de la même école que les deux précédentes) se joignait au projet. A la fin juin 1989, ce sont donc trois enseignantes à chaque niveau du cycle primaire (1,2,3) qui avaient inséré des centres d'apprentissage à l'intérieur de leur enseignant/approche et qui ont entrepris, dès septembre 1989, la consolidation de leurs acquis tout en devenant des ressources pour les six autres classes (cycle primaire) de cette école.

WEST PARRY SOUND BOARD OF EDUCATION

TITLE

West Parry Sound Primary/Junior Science Project

FOCUS OF PROJECT

Thinking skills

TARGET GROUP

All P/J teachers in the system (70)

SPECIAL FEATURES

Audiotaped workshops to try out model lessons with small groups of students.

BOARD CONTACTS

Richard Poole
West Parry Sound Board of Education
70 Isabella St.
Parry Sound, Ontario
P2A 1N2
(705) 746-9371

PROGRAM SUMMARY

An interdisciplinary skills list was adapted for project use from the *Cognitive Skills Development Manual* in the Intermediate/Senior History Guideline. Workshops were conducted with all P/J teachers in the adequacy of the skills list to handle comparative and causal problem solving by students.

Science contact teachers from each school were the recipients of in-service for instructional strategies to strengthen student performance in causal problem solving.

NORTHWESTERN ONTARIO REGION

NORD-OUEST DE L'ONTARIO

ATIKOKAN BOARD OF EDUCATION

TITLE

Renewal of Primary/Junior Science Curriculum

FOCUS OF PROJECT

Revising Junior Kindergarten-Grade Six Science Curriculum

TARGET GROUP

Primary/Junior Staff (18)

SPECIAL FEATURES

A small committee representing Atikokan JK-Grade Six staff examined the present curriculum and the revised edition of the Lakehead District Roman Catholic Separate School Board curriculum.

BOARD CONTACT

Dennis Brown, Principal
Atikokan Board of Education
Atikokan, Ontario
P0T 1C0
(807) 597-6941

PROGRAM SUMMARY

Meetings were held by a Primary/Junior Science Committee to formulate plans for the implementation of the policy statement *Science Is Happening Here*. The committee is composed of five Atikokan elementary staff representatives. Initial discussion centred around the use of the present course of study being used in the Atikokan Board of Education elementary schools. The present curriculum is based on the Lanark, Leeds Grenville Program. From this it was decided to examine the curriculum being piloted by the Lakehead District Roman Catholic Separate School Board. Three representatives from the Lakehead Separate School Board made a presentation to the Atikokan Elementary Science Committee on March 29, 1989. This same presentation was made to all Atikokan Board of Education elementary teachers on June 20, 1989. This involves our Board purchasing the revised elementary Science curriculum from the Lakehead District Separate School Board as it reflects the integrated, shared discovery approach to learning that Atikokan staff wish to adhere to in working with our students.

DRYDEN BOARD OF EDUCATION

TITLE

Program Plus Science

FOCUS OF PROJECT

Intensive Professional Development for Primary/Junior "Teams" in each school

TARGET GROUP

12 Principals and 12 Teachers

SPECIAL FEATURES

Principal plus teams

BOARD CONTACT

Wayne Brown
Dryden Board of Education
Program Services
79 Casimir Avenue
Dryden, Ontario
P8N 2Z6
1-807-223-2206

PROGRAM SUMMARY

In each elementary school, the principal selects a teacher considered to be an influential staff member. These two people make up the Principal Plus team for their school.

These 12 school teams participate in a series of training sessions which reflect the new science initiatives--problem solving using inquiry techniques, "hands-on" experiences, exposure to new science kits and equipment, familiarity with print and AV resources available, and so on.

The team members are then expected to serve as resource persons within their schools to improve science teaching. This is consistent with our efforts to promote the idea that the principal is the curriculum leader in the school.

October 18, 1988 All Teams

Where are we in science? Where should we be?
The program elements of a good science program.

November 29/December 2, 1988 Split meeting

Inquiry and problem solving in Science

March 8 All teams

Print and video materials - what's available.
Modification of present Environmental Studies document to highlight science.
Presentation on active learning by Joanne Debnam

June 1

Pond Study - a hands-on (feet-in) day at a pond with students after a presentation at the Wildlife Museum at Vermilion Bay.

FORT FRANCES-RAINY RIVER BOARD OF EDUCATION

TITLE

Primary/Junior Science In-Service

FOCUS OF PROJECT

Implementation of instructional strategies that promote the processes of science identified in *Science Is Happening Here*

TARGET GROUP

74 teachers (K to 6)

SPECIAL FEATURES

Withdrawal in-service programs, peer coaching and Implementation Steering Committee

BOARD CONTACT

Merv Ahrens
Fort Frances-Rainy River Board of Ed. 522
Second Street East
Fort Frances, Ontario
P9A 1N4
(807) 274-5366

PROGRAM SUMMARY

The Year II Innovative In-service program included a variety of activities. Teachers were able to attend out-of-board workshops and conferences including the following:

S.W.I.S. in Ottawa	- 1 teacher
STAO in Toronto	- 1 teacher
Celebrating Science, Toronto, March, 1989	- 5 teachers

In all cases the participating teachers brought back a wealth of ideas and resources to share with their colleagues. In the case of the Celebrating Science conference in Toronto, the teachers who attended planned and delivered a follow-up, full day in-service workshop for all the Board's Primary teachers.

The services of three out-of-board science instructional experts were acquired to deliver three full day workshops as follows:

Michael Harrison

Educational Consultant from Ottawa, conducted a Junior Division science workshop. The emphases of the workshop included instructional strategies and background information on the following science topics: structures/construction using pins, straws and string; science of flight (planes, rockets, bubbles, etc.); and the use of toys and concrete manipulatives in the science program.

Joanne Debnam

Ministry of Education, Thunder Bay, introduced all the Junior teachers to the principles of Active-Learning. Science was used as the medium through which many of the concepts of Active-Learning were explored. With the presentor's assistance, initial planning for a Junior Division unit on Flight was undertaken.

Douglas Paul

Science Consultant, North York Board of Education, provided in-service to all the Primary teachers re: how to select sciencing experiences that match the developmental stages of the learner. Hands-on activities involving magnets, electricity, water,sand and blocks were emphasized. Assistance in identifying the "Big Science Ideas" in playful explorations by the young child was also provided.

Several teachers were granted time to visit classrooms to view a variety of science activities occurring in classrooms throughout the district.

FORT FRANCES-RAINY RIVER DISTRICT ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Renewal of Science Education in the Primary & Junior Division

FOCUS OF PROJECT

The intent of the project was to increase the knowledge base of administrators and teaching staff regarding science teaching and learning in an integrated, child-centred, and balanced curriculum. To facilitate this endeavour key personnel were trained and consequently provided a nucleus of expertise which facilitated long-term coaching and inservicing of staff.

TARGET GROUP

Curriculum coordinator, all principals and a cadre of teachers were provided with opportunities to develop comfort, competence and confidence in implementing new strategies for teaching science. A total of seven staff members were designated as key personnel.

SPECIAL FEATURES

Peer coaching and model science programs are features of the in-service project.

BOARD CONTACT

D. Botsford
Fort Frances-Rainy River District Roman Catholic Separate School Board
555 Flinders Avenue
Fort Frances, Ontario
P9A 3L2
(807) 274-2931

PROGRAM SUMMARY

A cadre of staff attended science curriculum conferences and received tuition subsidies for courses providing additional qualifications in science.

All Primary/Junior teachers attended workshops which were intended to provide them with a general awareness of new science initiatives.

Cadre members became resource people for staff members implementing new science teaching strategies. Their science programs have been used as models for other staff members.

Funds were set aside to provide release time for teachers acting as coaches or visiting classrooms displaying an integrated, child-centred and balanced science curriculum.

The renewed interest in teaching science and the increasing use of new teaching strategies by staff attests to the success of the project.

KENORA BOARD OF EDUCATION

TITLE

Science Innovative In-Service

FOCUS OF PROJECT

Interaction of "process" and "content" to promote active learning

TARGET GROUP

Primary/Junior teachers (80 approximately)

SPECIAL FEATURES

Strategies included coaching, school based projects, individual training and in-service

BOARD CONTACT

Pat Wyder
Kenora Board of Education
100 First Avenue West
Kenora, Ontario P9N 3Z7
(807) 468-5571

PROGRAM SUMMARY

June - August, 1988

Science Committee met with teachers to create guidelines for development of science kits during the summer by Experience '88 students who were provided to our Board by the Ministry of Education. These kits were created from existing materials and organized to be used in conjunction with the Board's Primary/Junior science course. This course was developed to meet the requirements of the new Ministry of Education document for science as a result of the science committee's review of the original science course.

September, 1988

Science Committee members assumed responsibility for introduction of the science course to elementary schools. Release was allowed to prepare and present the curriculum changes.

October, 1988

Units developed around theme of "Bats" in cooperation with Ministry of Natural Resources. Teachers specifically working with science education in mind. This builds on other units: "Loons", "Bluebirds", etc.

November, 1988

Three classroom teachers and two principals attended the fall science conference in Toronto. These activities were shared with staff.

December, 1988

Part I (of III) of a peer coaching series of workshops designed to support classroom teachers in improving their teaching strategies. Release was provided.

February, 1989

Coaching Series II. Release as needed was provided.

March, 1989

Participation in the Ministry of Education Science Conference "Celebrating Science" by four classroom teachers and one principal. Participants shared this at each of the schools.

April, 1989

Coaching Series III - Release was provided.

May, 1989

Units developed at various schools on the "Pike". Various science activities were initiated to investigate fish. This built on other units previously taught.

June, 1989

Coaching Wrap-Ups through visitations at each of the schools.

LAKEHEAD BOARD OF EDUCATION

TITLE

Learning Partners in Science

FOCUS OF PROJECT

Assist teachers and principals to develop and implement programs in Science consistent with *Science Is Happening Here.*

TARGET GROUP

Principals and teachers in the Primary and Junior Divisions of The Lakehead Board of Education (500)

SPECIAL FEATURES

A committee composed of principal, teacher and curriculum department representatives provided leadership in the area of Science. Program support included coaching activities, in-service workshops and the development of planning instruments.

BOARD CONTACT

Russ Garrett, Coordinator of Pure and Applied Science
The Lakehead Board of Education
125 South Lillie Street
Thunder Bay, Ontario
P7E 2A3
(807) 625-5155

PROGRAM SUMMARY

Science was labelled as a priority area for the Primary and Junior divisions for schools in The Lakehead Board of Education for 1988-89. The Science implementation committee that was created concentrated its efforts on tasks designed to assist educators to implement programs consistent with *Science Is Happening Here.* The committee organized a "Teachers Helping Teachers" resource list for our Board. We also developed a list of equipment recommendations for the Primary and Junior classrooms. In addition the science committee created a self evaluation tool entitled "Instrument for Planning My Science Program". Also a tracking sheet was developed for schools to use to determine the implemented curriculum.

To meet the needs of teachers in specific areas of curriculum we have developed units, held workshops and supported specific resource needs. Units on weather, soil and mixtures were developed. Workshops have been held on the same topics and print and other resources have been provided for participants who were invited from every school in the system. Activity cards created for classes in English have also been made available in French for our Immersion schools. To support specific resource needs in science curriculum ares, our personnel provided in-service on the use of kits available at our Instructional Materials Centre.

A key feature of our program has been the curriculum assistant model. The five people in these roles have provided help to principals, teachers, individual schools, and families of schools. In their coaching efforts the curriculum assistants have focused on how to plan, implement and evaluate specific science units. This group provided a unique in-service activity for the principal and a teacher from each school. At this practical in-service event the philosophy of *Science Is Happening Here* was promoted. By having a pair of individuals from the school attend, we have created an in-school team that will promote science activities next year.

LAKEHEAD DISTRICT ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary and Junior Science

FOCUS OF PROJECT

Implementation of Primary and Junior Core Curriculum

TARGET GROUP

Primary and Junior Teachers (250)

SPECIAL FEATURES

Inquiry process and hands-on activities

BOARD CONTACT

Kevin Debnam
Lakehead District Roman Catholic Separate School Board
212 Miles Street East
Thunder Bay, Ontario
P7C 4Y5
625-1555

PROGRAM SUMMARY

This special one-time funding will be used for implementation strategies to primarily highlight the following roles of the teacher:

- to help all children realize their full potential for equal participation in all science activities by both boys and girls
- to consciously involve all children in the full range of learning opportunities, roles, and activities in science including recording, reporting, setting up experiments, using equipment, maintaining safety awareness and tidying up work areas

All the primary science core workshops will highlight the inquiry process with a focus on hands-on activities and inquiry learning to help children develop individual skills that will help them become the active learners envisaged in the Ministry's image of the learner.

NORTHERN DISTRICT SCHOOL AREA BOARD

TITLE

Primary/Junior In Service Science Workshops

FOCUS OF PROJECT

In Service At Primary/Junior Science Levels

TARGET GROUP

Primary/Junior Science Teachers, 8 staff members

SPECIAL FEATURES

Coaching and Cooperative Teaching Strategies: Along Play/Active/Discovery Approach Learning

BOARD CONTACT

Mark K. Olacke
Northern District School Area Board
P.O. Box 98
Armstrong, Ontario
P0T 1A0
(807) 583-2010

PROGRAM SUMMARY

The objectives of receiving the in-service grant:

- to acquire and extend basic skills fundamental to the teaching of P/J Science;
- to develop confidence in science education
- to overcome the negative attitudes often associated with science education
- to encourage women teachers to take a more active role in science teaching and leadership
- to inform staff of P/J science initiatives
- to seek strategies for improved implementation of science in small schools with limited resources
- to change students' attitudes to encourage further study in science and technology
- to address the lack of in-service programs available to isolate teachers
- to ensure quality in science education were successfully attained through the following in-service workshops:
  - Curriculum 88 Science Conference
  - Kindermucking Science
  - Celebration 88 Science Workshop

By attending these workshops our Primary/Junior teachers were then able to facilitate coaching and team teaching approaches along play/discovery modes to other staff, the pupils and parents in our communities through:

- school in-service co-operative planning
- community workshops
- inventive science lessons

The teachers gained positive skills, confidence and attitudes towards the teaching of science. The students also gained in skills, confidence and their attitudes, attitudes which were positive and non-sterotypical. In conclusion, the in-service grants allowed our system to enable quality science in-service and a resultant high quality education process in Science.

RED LAKE BOARD OF EDUCATION

TITLE

Science Renewal Project

FOCUS OF PROJECT

Implementation of a new JK-6 child-centred curriculum in Science

TARGET GROUP

33 JK-6 teachers, 3 principals, 3 library technicians and ultimately 708 students

SPECIAL FEATURES

Peer Coaching

BOARD CONTACT

Bonnie Stemkens
Red Lake Board of Education
20 Young Street
Red Lake, Ontario
P0V 2M0
(807) 727-2676

PROGRAM SUMMARY

The project has been enthusiastically received and has resulted in a renewed interest in the teaching of Science by JK to Grade 6 teachers throughout our Board. Implementation of a new child-centred curriculum is well underway.

Teacher knowledge and expertise in the delivery of Science has been developed according to the following:

1. Throughout the year three Professional Development Days were dedicated to activities which were designed to motivate teachers and enhance their awareness of new approaches to teaching Science. School principals and staffs were assisted by Mr. Michael Fullan in developing action plans for change toward active-learning using Science as a vehicle. School in-service was provided to assist teachers in developing program objectives that incorporate Science in a balanced and integrated manner.

2. A committee of six primary/Junior teachers (two from each elementary school) and one principal was formed to provide staff with leadership and on-going support during this initial period of change. This committee received additional professional development in Science as well as training in the use of peer coaching as a implementation strategy. The coaching teams have been using Wayne Seller's model to assist teachers in their respective schools.

   The committee met regularly throughout the year to share ideas and materials, and to update plans for program delivery. As well, they were given release time on a monthly basis to perform in-school coaching activities.

3. The project was co-ordinated by the Education Assistant and monitored cooperatively by the committee and the principals. A presentation was made to the Director in early June. The school library technicians were included in professional development activities and committee meetings so that they could anticipate changes in service requirements. They have worked closely with the peer coaches in providing materials for teachers.

Although total implementation cannot be achieved in one year, the project has been highly successful. With the continued support of the Board and administration, we hope to have the program operating smoothly in each classroom by June 1990. Science truly is happening here.

UMFREVILLE DISTRICT SCHOOL AREA BOARD

TITLE

Science Implementation Project

FOCUS OF PROJECT

Intensive Inservicing of Teachers to clarify the vision of science education described in *Science Is Happening Here*

TARGET GROUP

Staff of St. Patrick's Separate School, Atikokan, Ontario = 12

SPECIAL FEATURES

Ongoing support and coaching by Isolate Board Science Consultant
Development/revision of unit of science to present to other Isolate Teachers

BOARD CONTACT

Debbie Knight
Umfreville District School Area Board
1820 Victoria Avenue
Thunder Bay, Ontario
P7C 1E2
(807) 623-4301

PROGRAM SUMMARY

Through Steering Committee meetings, P.D. Workshops and school visits by the Board Science Consultant, Ministry of Education person and a Consultant (guest expert), teachers were guided through *Science Is Happening Here* and its policy expectations related to the classroom experience.

Teachers designed their own unit (Snow & Ice, Primary) using the Science Document and the Juniors adapted the North York Unit (Snow & Ice) using the Science Document.

In February of 1989 designated teachers, from the project, presented their units in workshop form to the Isolate school teachers.

The teachers from St. Patricks's (P/J) then piloted a variety of Units from the North York Board of Education and are in the process of evaluating these as input into the updating of the Lanark-Leeds Grenville Science Document presently in use in the Isolate schools.

WESTERN ONTARIO REGION

OUEST DE L'ONTARIO

BRUCE COUNTY BOARD OF EDUCATION

TITLE
Primary-Junior Science Renewal

FOCUS OF PROJECT

1. In-Service of OSC Science Kits
2. Implementation of *Science Is Happening Here*

TARGET GROUP

All Primary and Junior teachers, Librarians and Special Education.

SPECIAL FEATURES

1. Pilot Schools
2. Peer Coaching
3. County-Wide "Special" Day for Science

BOARD CONTACT

C. Birchard
Bruce County Board of Education
P.O. Box 190
Box 190, Chesley, Ontario
N0G 1L0
(519) 363-2014

PROGRAM SUMMARY

Innovative In-Service Teacher Education

1. Kit Equipment

At least three of each of the Primary/Junior science kits being developed by the Ontario Science Centre will be purchased for use by Bruce County teachers.

1989 winter team - implement series I kits in 5 schools, 15 classrooms.

1989 spring team - implement series I kits in an additional 5 schools, 15 classrooms.

1989 fall team - continue series I kits, implement series II kits, total of 33 classrooms.

1990 winter team - continue series I kits, continue series II kits, add series III kits, total 48 classrooms.

1990 spring team - establish long-term annual loan schedule for all kits.

At an appropriate time in the above schedule, additional technical staff time will be added to the AV Department for checking and replenishing kits between loan periods.

BRUCE-GREY COUNTY ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Innovative In-Service Incentive Fund

FOCUS OF PROJECT

- how the priority areas will be addressed
- the objectives of the project
- the innovative qualities of the project

TARGET GROUP

Teachers - Primary/Junior

Chepstow	5		
Durham	3		
Formosa	5	French Immersion	3
Hanover	9		
Kincardine	9	French Immersion	5
Mildmay	7		
Owen Sound	14		
Port Elgin	9	French Immersion	4
Teeswater	5		
Walkerton	11		
	77		12

The expectation is that all teachers in the Primary/Junior divisions will receive some degree of inservicing from coaches in either English or French throughout the time of the project.

SPECIAL FEATURES

Staff assigned to the project including titles and areas of responsibility:

1. 5 Coaches: 2 primary teachers, 2 junior teachers, 1 French immersion teacher

In the selection of coaches preference will be given to women since the majority of teaching staff in the Primary/Junior division are women.

2. Project Coordinator

Chairperson of Primary/Junior Science Curriculum Council

3. Advisory Committee

Primary/Junior Curriculum Council:
- 2 Junior Division Teachers (1 female)
- 1 Primary Division Teacher (female)
- Supervisory Officer

BOARD CONTACT

V. Batte
Bruce-Grey County R.C.S.S. Board
799 - 16th Avenue
Hanover, Ontario
N4N 3A1
(519) 364-5820

PROGRAM SUMMARY

Identify a pool of coaches (4 English, 1 French) with an avid interest in Primary/Junior Science, possessing a good understanding of the Ministry guideline, and who capture the essence of the activity-based inquiry-approach strategies in their classrooms. Following an initial workshop designed to familiarize the coaches with various strategies and techniques to be used with teachers, the coaches visited Primary/Junior classrooms across the system. The model incorporated three distinct phases:

1. Diagnosis: teacher and coach co-operatively assessed the specific needs in the classroom and designed alternatives in line with Ministry guidelines.
2. Prescription: teacher and coach in a team approach attempted to implement specific strategies in the classroom. Strategies utilized were identified under "Diagnosis".
3. Follow-up: coach followed up with a series of visits to support and assist the classroom teacher.

All Primary/Junior classrooms were visited at least three times by a coach. Purpose of the project was to provide in-service from fellow teachers in a collegial model. The priority was familiarization with the Primary/Junior Guideline and implementation of strategies that are student centred and incorporate the manipulative or hands-on mode of learning.

ESSEX COUNTY ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Sciencing: Seeds Project

FOCUS OF PROJECT

Implementation of resource document: *Science is Happening Here*

TARGET GROUP

Primary and Junior Divisions: 23 Primary teachers and 18 Junior teachers

SPECIAL FEATURES

Four teachers from the Primary and Junior divisions were chosen as coaches. The remaining teachers became seed teachers. They in turn will act as resources for their colleagues within their own school.

BOARD CONTACT

Carol Pfaff and Margaret Ehrentraut,
Primary/Junior Consultants
H. Diane Wood, Superintendent of Education

The Essex County Roman Catholic
Separate School Board
360 Fairview Avenue West
Essex, Ontario
N8M 1Y5
(519) 776-6431

Catholic Education Centre
24 Talbot Street North
Essex, Ontario
N8M 1A4
(519) 776-4236

PROGRAM SUMMARY

Goals

The primary goal of this Science project was to provide teachers with actual Science learning experience to further develop their own skills, knowledge and positive attitude toward Science and Technology. The natural extension of this goal was to have newly trained teachers willing to implement the spirit of *Science is Happening Here* in their own classrooms.

Sample

Four teachers (2 Primary, 2 Junior) were chosen as the coaching teachers. These teachers met the eligibility criteria for this project in the following manner:

a) a willingness to act as coaches and accept visitations from seed teachers throughout the system;
b) a classroom setup that was predominantly child-centred and reflective of the Ministry of Education's policy statement re "Science in the Primary and Junior Division";
c) a willingness to be actively involved in the in-service sessions by taking a lead role in their respective divisions.

Forty-one seed teachers were chosen from the schools after consultation with the respective principals. All project teachers demonstrated a willingness to learn new approaches and exhibited enthusiasm for the project.

Procedure/In-service Sessions

In the first phase of the project the coaching teachers were released from their classrooms for professional development and planning sessions. They attended two out-of-town conferences, examined resource materials, familiarized themselves with the resource documents, *Science is Happening Here* and "Science in the Primary and Junior Divisions", visited one another's classrooms outside our system.

They were also involved in a two day intensive training workshop with the consultants of the Board. Once the coaches had received orientation and in-service with the consultants, the seed teachers were brought in for in-service. Sessions were conducted from January through June (see Appendix A). The major portion of these sessions dealt with learning activities that involved:

- familiarization with Board and M.O.E. curriculum materials
- hands-on activities in Science, including demonstrations
- use of TVO and other resources
- comfort with and enjoyment of Science

There was also an emphasis on:

- Language Arts and Science
- special needs children and Science
- women in Science

Results/Outcome

Although the actual effect of this project is yet to be determined, the initial feedback by seed teachers, coaches and respective principals has been extremely promising. Debriefing sessions with the seed teachers have already supported positive outcomes. The project itself has generated the following:

- collection and distribution of successful Science activities for pupil use;
- a choice of suitable recording formats for "young scientists" that are motivating, useable for varying ability levels and open-ended;
- ideas for involving parents in order to gain their support in encouraging sciencing at home;
- short video clips of varying learning environments that may be utilized in future in-services;
- ideas for Science across the curriculum;
- ideas for classroom environment and management;
- lists of needed renewable and non-renewable resources;
- ideas for the utilization of assessment techniques such as observation.

Implications

There is no doubt that we will continue to extend this project in the next school year to include other seed teachers. Moreover, there is a strong possibility that we will utilize this in-service model in other curricular areas.

GREY COUNTY BOARD OF EDUCATION

TITLE

Implementation of Science Is Happening Here

FOCUS OF PROJECT

- To apply science in the real work of the child. Using the peer coaching model and workshops, significant emphasis will be placed on teaching strategies allowing students to experiment, manipulate and explore science in an active learning setting.
- To help English and French Immersion teachers become more comfortable in integrating science in the total curriculum.

TARGET GROUP

Primary and Junior Teachers
(approximately 350)
Primary and Junior Students
(approximately 6800)

SPECIAL FEATURES

- Peer coaching
- Promotion of hands-on science
- Public awareness campaign
- Leadership roles for women in science

BOARD CONTACT

Susan Sankey
Special Assignment Teacher,
Primary/Junior Division
Grey County Board of Education
P.O. Box 100
55 Victoria Street
Markdale, Ontario
N0C 1H0
(519) 986-3410

PROGRAM SUMMARY

- Program continued hands-on science in the classroom through various workshops including:
  - science circuits
  - critical thinking
  - thematic units for cross-grade groupings
  - observation and assessment
- Promotion of active inquiry-based learning through the acquisition of:
  - teacher resource packages
  - manipulative science materials
- Peer Coaching Model utilized two teachers for a month each, highlighting out-of-classroom experiences and focusing on environmental issues.
- Six elementary schools are now networked through CHIMO participating in "Science Conference".
- Computer software provided students with simulations of the real world, i.e.
  - Greenhouse
  - ECO-Island
  - Watfile-Project Plant

- Computers were used as a tool for the collection of scientific statistics via database and for composing reports using word processors.

- Three task force members acted as facilitators of the Peer Coaching Model to develop the strategies for the implementation of *Science Is Happening Here.* Wayne Seller and Dr. Lynne Hanney advised the peer coaching team.

- Six pilot projects were initiated using peer coaching to implement an aspect of *Science Is Happening Here.*

- A flyer called Encouraging Science Awareness was published to communicate the efforts of science task force to promote science within Grey County.

- Female members of the science task force assumed a leadership profile in Science Education by presenting at the following conferences:
  - Grey County P.A. Days (January 26 & 27/89)
  - Kids and Curriculum
  - FWTAO - Classroom Teacher
  - Celebrating Science
  - Peer Coaching: An Invitational Retreat

- Task Force members attended various conferences which fostered networking with out-of-county professionals providing insight into current scientific pedagogy.

- Special community activities to heighten public awareness of science education included:

  - distribution of flyers
  - participating displays at shopping malls
  - presentations to members of the Board
  - encouraging student involvement with science activities at fall fairs

- Trained coaching facilitators from the science task force provided in-service for individual schools to heighten teacher awareness of the peer coaching model.

- The Science Task Force implemented the following process in peer coaching for *Science Is Happening Here*:

STAGE & TIME	TARGET GROUP	VEHICLE	STRATEGIES
Stage I: June '85 June '86 February '87	Primary/Junior Teachers	Workshops	• introduction of board-produced science kits • presentation by Les Asselstine • integration models (material objects and winter) • outdoor education • science circuit • TVO and science

Stage II: April '87	Trustees Director Superintendents Principals	Workshop	• Wayne Seller (OISE) in-school coaching model (half-day) • philosophy, process administrative concerns re: model implementation
Stage III: April '88	Key Task Force Members	Workshop	• Wayne Seller (OISE) in-school coaching model (1 day) • philosophy and process introduction to "The Tasks of Coaching"
Stage IV: Fall '88	Principals Key Task Force Members	Submission of proposals re: assistance in implementing in-school coaching model within their school	• 1/2 day workshops re: philosophy, role of participant, proposed projects by science task force members familiar with the model
Stage V: Fall '88	Teacher Participants	Information, observation and feedback sessions	• 1/2 day sessions with Science Task Force facilitators re: implementation of in-school coaching model
Stage VI: Fall '89	In-School Teacher Coaching Situations	In-school coaching model	• set up coaching situations by participants in Stage 5 within their own school • science task force facilitators and resource people

HURON COUNTY BOARD OF EDUCATION

TITLE

Science is Happening Here *Implementation*

FOCUS OF PROJECT

- In-service for teachers
- Access resources

TARGET GROUP

200 teachers

SPECIAL FEATURES

- Staff workshops after school and on P.D. days
- Regional gatherings to introduce Science kits
- Science Showcase at board office

BOARD CONTACT

Lillian Hallam
Huron County Board of Education
103 Albert Street
Clinton, Ontario
N0M 1L0
(519) 482-3496

PROGRAM SUMMARY

The first year was spent in creating an awareness of the thrust of the document *Science Is Happening Here.*

To encourage a Science focus in the elementary day, the coordinator demonstrated how Science Kits would enhance a science program (the first set from the Science Centre has been purchases and the second set has been ordered). There was also a workshop on integrating science and language arts through resources and activities.

Librarians have been kept up to date on new resources available to support teachers move toward implementing the Science focus.

A bibliography of resources has been compiled.

A list of current materials in the schools has been collected.

A science liaison person has been selected at each school.

We had a Science Showcase of resources both hands-on and research) with 12 distributors present. Most schools were represented by their liaison person and other teachers visited the display after school hours.

We talked with suppliers about producing school science kits independently.

Money has been set aside in most schools to start a three year purchase plan for resources. Kits are being created at the school level.

A Science Coordinator has been hired.

HURON-PERTH ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Science in Primary and Junior Education

FOCUS OF PROJECT

Science Fair P.A. Day, In-Service of two teachers per school and validation of Draft Document, Development of Final Curriculum

TARGET GROUP

One primary and one junior teacher per school (32), 7 committee members and 175 teachers at a P.D. Day

SPECIAL FEATURES

see below

BOARD CONTACT

G. L. Blanchette
Huron-Perth Roman Catholic Separate School Board
Dublin, Ontario
N0K 1E0
(519) 345-2440

PROGRAM SUMMARY

This year we provided 32 teachers (one Primary and one Junior per school) 3 1/2 days in-service training on the document *Science Is Happening Here* and the draft of the Primary/Junior Science Curriculum Document. These teachers piloted various units as part of the validation process. We are now ready to develop the Final Primary/Junior Science Curriculum Document for introduction in the schools in September. These workshops are providing two teachers in each school to assist principals and other teachers in the implementation of the new curriculum after its release. All primary/junior teachers were also exposed to a system Professional Activity day on the topic "Science Fairs". Our Board entered the Canada-Wide Science Fair competition this spring. The curriculum writing team will fine-tune the curriculum documents in the summer.

LAMBTON COUNTY BOARD OF EDUCATION

TITLE
Primary Junior Science Centre

FOCUS OF PROJECT
Development of a Primary/Junior Science Centre

TARGET GROUP

Trustees of Lambton County Board of Education	- 17
Senior Administration	- 6
Elementary Principals and Vice-Principals	- 60
Primary Teachers (English & French)	- 200
Junior Teachers	- 160
Teacher-Librarians	- 29
Special Education Resource Teachers } Special Education Teachers }	- 50

SPECIAL FEATURES
- Teacher Science Centre where teachers can plan and develop Science activities for their classrooms as well as seeing available Science resource materials.
- Peer Coaching to assist teachers in implementing new Science program in their classrooms
- Team Concept in the decision-making process for Science in-service at both the school and system level.

BOARD CONTACT
Ted Stewart, Curriculum Co-ordinator
Lambton County Board of Education
200 Wellington Street
Sarnia, Ontario
N7T 7L2
(519) 336-1500

PROGRAM SUMMARY

A Primary/Junior Science team developed a centre for science in-service for Lambton County.

The Primary/Junior Science Centre is intended to be a permanent working area for teachers, principals and teacher-librarians. Displays of science-related materials were made available so that teachers could see what was currently available in the area of Science. Ongoing in-servicing of teachers is being conducted at the centre, using the materials and books. Teachers will also continue to have opportunities to make materials for classroom use. The centre also provides a place where teachers can share ideas related to Science in workshop sessions. The Primary/Junior Science team helped in the setting up of the centre. This centre was developed as one component of the long range plans identified by the Primary/Junior Science Team.

Use of the Centre:

The Teacher Centre for Science In-service will continue to be used by Primary/Junior teachers and principals in a variety of ways:

1. Current materials, resources, learning centres and science kits are permanently displayed at the centre. Teachers and principals are encouraged to borrow and develop materials for their own use.
2. In-service sessions have been and will continue to be organized for all elementary principals to increase their knowledge of the current philosophy for Science and the types of materials required for classrooms.

3. Classroom teachers have been and will continue to be involved in workshops organized by program personnel and members of the Primary/Junior Science team on system P.A. Days and during after-school workshops.

4. The centre has been made available to principals and/or classroom teachers for use on in-school P.A. Days, or for after-school sessions. Ongoing activities continue to be based on identified teacher needs and will include opportunities to:
- peruse new materials and displays
- make classroom materials related to science
- design science learning centres
- attend presentations by consultant staff or guest speakers
- be involved in additional activities identified by teachers and principals

5. Short courses focusing on science topics identified by classroom teachers at the Primary and Junior levels will be held at the centre. These courses will include 20 hours of instruction. The courses will be taught by the Primary and Junior consultants assisted by members of the Primary/Junior Science team.

6. Practising classroom teachers have been and will continue to be asked to contribute ideas for the centres. These teachers may also assist in the in-servicing of other teachers.

LAMBTON COUNTY ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE
Project WILD

FOCUS OF PROJECT

To in-service teachers in outdoor education activities

TARGET GROUP

Teachers of Junior Kindergarten to Grade Six inclusive. Total of 195 teachers.

SPECIAL FEATURES

Conduct seven Project WILD Workshops for all primary and junior grade teachers.

BOARD CONTACT

Onorio Frezza
Lambton County Roman Catholic Separate School Board
430 Christine Street South
Sarnia, Ontario
N7T 2N8
336-6139

PROGRAM SUMMARY

Our aim is to provide seven six-hour Project WILD workshops to in-service all our teachers from Junior Kindergarten to Grade Six inclusive.

Project WILD is a supplementary educational program emphasizing the conservation of wildlife and its habitat. It is based on the premise that young people and their teachers have a strong interest in wildlife and the environment they share with wildlife. The importance of wildlife and environmental issues in present-day society underscores the need for a well-informed public. Project WILD is designed to develop an awareness in young people resulting in informed decisions and responsible behaviour.

As with all good teaching materials, Project WILD is concerned with providing information and helping students to evaluate choice. Strict efforts at balance and objectivity, as well as the technical validity and educational value of the materials, have gained sponsors from a number of organizations representing a wide range of views on wildlife, habitat and their management. In short, it helps young people learn how to think, not what to think.

Project WILD is a unique opportunity for educators and wildlife managers to work together to teach students about wildlife. It uses two main tools: activities and workshops. Activities appear in the Project Wild Activity guide. The workshops train participants to use the Guide effectively. Only by attending a workshop can a person obtain a Project WILD Activity Guide.

Through the exposure of the entire staff of Primary and Junior teachers of the Board to wildlife and environmental concepts promoted through Project WILD, it is hoped public awareness will increase and our teachers will be able to establish an improved environmental ethic within the minds of the students in their charge.

LONDON BOARD OF EDUCATION

TITLE

Integrated Science Themes

FOCUS OF PROJECT

Initiation and implementation of eight integrated, child-centred science instructional units supported by manipulative kits

TARGET GROUP

Primary and Junior classrooms in London

SPECIAL FEATURES

Instructional units provide well-planned science activities which can be accepted into learning environments which feature centres and subject integration by themes. Support materials are bilingual and activities avoid sexual stereotyping.

BOARD CONTACT

Ross Turnbull/Irene Pollock
London Board of Education
Education Centre
1250 Dundas Street
London, Ontario
N6A 5L1
452-2033

PROGRAM SUMMARY

1. Eight theme areas were identified from *Science Is Happening Here* and writing teams of 3 to 5 teachers were organized for each theme.

Primary:	Dinosaurs	Junior:	Simple Machines
	Light and Colour		Living In Space
	Creepy Crawlies		Weather
	Toys, Tools, Machines		Flight

2. Three teacher release days for each unit were provided to facilitate the development of child-centred activities and supporting manipulative kits. Learning opportunities at our outdoor Environmental Centres provide further support.

3. Selected classes piloted the units and a minimum of 8 in-service workshops were given to Primary and Junior teachers to implement the activities and the support kits. Additional professional development sessions were given by Rod Peturson, Les Asselstine and Gordon Penrose (Dr. Zed), to support an activity-based approach to Science.

4. Full-day implementation workshops were provided for 150 London teachers to support the use of Project WILD curriculum activities. Environmental science themes are encouraged for use in P/J classrooms and are support with activities at the Environmental Centres.

OXFORD COUNTY BOARD OF EDUCATION

TITLE
Science Is Happening Here

FOCUS OF PROJECT
An integrated, child-centred, balanced primary/junior program.

TARGET GROUP
An initial group of 16 primary/junior teachers. At the end of the project, all primary/junior teachers in Oxford were included.

SPECIAL FEATURES
Modified coaching techniques, workshops

BOARD CONTACT
Don Taylor
Oxford County Board of Education
P.O. Box 636, 94 Graham Street
Woodstock, Ontario
N4S 7Z8
(519) 539-4821

PROGRAM SUMMARY

September 1987

A group of teacher advisors was selected to work with the Primary and Science Consultants and the Executive Assistant, Curriculum

A proposal was prepared by this group.

November 1987

The proposal was approved by The Oxford County Board of Education.

December 1987

Detailed explanations of the project were given by the Primary and Science Consultants and the Executive Assistant, Curriculum, to all principals at regularly scheduled area principals' meetings.

An initial group of sixteen teachers was selected (two Primary and two Junior teachers from each of four areas). These people were chosen on the basis of proven competency, an interest in science and a willingness to provide in-service sessions for other teachers.

January 1988

The initial group of sixteen teachers was presented with an outline of the project and with the content and philosophy of *Shared Discovery* and *Science Is Happening Here.* This workshop was conducted by the Science and Primary Consultants.

March 1988

At the second workshop (4:00 p.m. to 8:00 p.m.) of the initial group, evaluations were made of the results obtained through the use of the materials and techniques presented at the January workshop.

Part of this session was devoted to coaching techniques.

Each of the sixteen teachers then had to select another teacher in the county with whom they could share teaching methods. They were also encouraged to explore variations of coaching to find techniques with which they felt comfortable.

Two half days were provided to enable the teacher in the initial group and the partner being trained to visit each other's classrooms.

May 1988

The sixteen teachers from the initial group were brought together with their partners to evaluate the status of the project.

Planning was begun for a county-wide professional activity day to be held in September, 1988.

September 1988

A full day of activities related to the project was provided for all primary/junior teachers in Oxford.

Each of the teachers in the initial group, together with his or her partner presented a workshop in which the learning objectives of *Shared Discovery* and *Science Is Happening Here* were emphasized.

Copies were made of all print materials prepared for the workshops and distributed to all elementary schools with primary/junior grades.

Implementation of the *Science Is Happening Here* document continues to be monitored by the Primary and Science Consultants.

WINDSOR ROMAN CATHOLIC SEPARATE SCHOOL BOARD

TITLE

Primary Junior Science Initiative

FOCUS OF PROJECT

Year II of the Initiative focused on Primary and Library Resource teachers. The goals were to:

1. establish Key Primary teachers
2. professionally develop Key Science teachers and all other Primary teachers in their understanding of *Science Is Happening Here*
3. provide teachers with in-school support for science through vigorous in-service of the Library Resource teachers.

TARGET GROUP

1. Primary teachers - approximately 130
2. Resource teachers - 45

SPECIAL FEATURES

1. Key Primary Science teachers were challenged to in-service other members of their staff.
2. Library Resource teachers functioned as in-school consultants to organize science materials and aid Primary and Junior teachers in implementing new science units.
3. Primary teachers were encouraged to view science as an opportunity to have children become communicators and creative problem solvers.

BOARD CONTACT

Mr. Ron Dywelska, Consultant
Windsor Roman Catholic Separate S.B.
1485 Janette Avenue
Windsor, Ontario N8X 1Z2
(519) 253-2481 ext. 270

PROGRAM SUMMARY

1. In the fall, Ministry personnel conducted parallel workshops for Key Primary Science teachers and Resource Primary Science teachers and Resource teachers. The intention was to provide information about *Science Is Happening Here* so that these groups could set goals for their Professional Development.

2. In January Board personnel conducted a second set of Professional Development Workshops which focused upon each teacher's Science program. Teachers experienced Science as a way of thinking and acting as opposed to the transmission of a body of knowledge. This enabled them to correlate the suggested knowledge bases from *Science Is Happening Here* with language arts, math and other programs.

3. A decision was made at the January workshop to allow other Primary teachers to use the remaining "teacher release" time. This would allow primary teachers on each staff to receive the same message.

4. In a workshop in April these sessions were held.

The results of our efforts over the last two years are:

a) Principals understand and support the Primary Junior Science Initiative.
b) We have a steering committee in place to guide future decisions.
c) Teachers are aware of Ministry expectations in science and are receiving support from their resource teachers.
d) Through the learning materials grants and the school budgets a large amount of science equipment has been purchased for our schools.
e) Teachers have developed some brief units for science and see the need to develop others.
f) Teachers feel that science is an important aspect of their program and that children enjoy this process-oriented direction.